Vol. 996 Number 5

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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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July 29, 1980

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OF COMMERCE

Patent
and
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Office

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July 29, 1980 Volume 996 Number 5

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

June 17, 1980.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Errata

Defensive Publications published in the OFFICIAL GAZETTE of Mar. 4, 1980, were numbered incorrectly. The correct numbers are as follows:

T992,001 for the Defensive Publication entitled "Preformed Hot-melt Sealant Strip."

T992,002 for the Defensive Publication entitled "Coating Composition."

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,668,658, Re. S.N. 128,348, Filed Mar. 10, 1980, Cl. 360/97, MAGNETIC RECORD DISK COVER, Ralph Flores, et al., Owner of Record: *International Business Machines Corporation, Armonk, N.Y.,* Attorney or Agent: Elliott I. Pollock, Ex. Gp.: 235

3,887,768, Re. S.N. 144,533, Filed Apr. 28, 1980, Cl. 178/67, SIGNAL STRUCTURES FOR DOUBLE SIDE BAND-QUADRATURE CARRIER MODULATION, George D. Forney, Jr., et al., Owner of Record: *Codex Corporation, Newton, Mass.,* Attorney or Agent: Robert E. Hillman, Ex. Gp.: 233

3,911,202, Re. S.N. 079,566, Filed Sep. 27, 1979, Cl. 174/120 SR, ELECTRON CURED PLASTIC INSULATED CONDUCTORS, Clifford R. Stine, et al., Owner of Record: *Eaton Corporation, Mantua, Ohio,* Attorney or Agent: Clelle W. Upchurch, Ex. Gp.: 213

3,956,740, Re. S.N. 114,708, Filed Jan. 23, 1980, Cl. 364/900, PORTABLE DATA ENTRY APPARATUS, Michael Dale Jones, et al., Owner of Record: *Inventors,* Attorney or Agent: J. Herman Yount Jr., et al., Ex. Gp.: 237

3,973,051, Re. S.N. 152,561, Filed May 22, 1980, Cl. 426/574, PECTATE GELLED FOOD PRODUCTS AND METHOD, Keith Buckley, et al., Owner of Record: *Mars Limited, London, England,* Attorney or Agent: Richard Whiting, et al., Ex. Gp.: 172

3,975,965, Re. S.N. 138,766, Filed Apr. 9, 1980, Cl. 74/242.11 R, TENSIONING APPARATUS, Billy L. Speer, Owner of Record: *Dayco Corporation, Dayton, Ohio,* Attorney or Agent: Charles E. Bricker, Ex. Gp.: 352

4,016,575, Re. S.N. 116,082, Filed Jan. 28, 1980, Cl. 354/33, EXPOSURE CONTROL SYSTEM FOR FLASH PHOTOGRAPHY, Takashi Uchiyama, et al., Owner of Record: *Canon Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: David Toren, et al., Ex. Gp.: 211

4,049,158, Re. S.N. 135,734, Filed Mar. 31, 1980, Cl. 222/95, PRESSURIZED CONTAINER-DISPENSERS AND FILLING METHOD, Vincent Lo, et al., Owner of Record: *S. C. Johnson & Son, Inc., Racine, Wis.,* Attorney or Agent: Joseph T. Kivlin, Jr., et al., Ex. Gp.: 311

4,073,077, Re. S.N. 123,671, Filed Feb. 22, 1980, Cl. 337/50, SNOWPLOW BLADE EXTENSION, Albert E. Essell (Deceased), et al., Owner of Record: *Inventors,* Attorney or Agent: Harold S. Meyer, Ex. Gp.: 337

4,086,702, Re. S.N. 102,384, Filed Dec. 11, 1979, Cl. 433/21, MULTI-STRANDED COILED ORTHODONTIC ARCH WIRE, Melvin Wallshein, Owner of Record: *Inventor,* Attorney or Agent: Leonard Holtz, Ex. Gp.: 333

4,088,138, Re. S.N. 148,159, Filed May 7, 1980, Cl. 128/419 D, CARDIAC RESUSCITATOR AND MONITORING APPARATUS, Archibald W. Diack, et al., Owner of Record: *C.R.C. Successor Corporation, Secaucus, N.J.,* Attorney or Agent: Daniel P. Chernoff, et al., Ex. Gp.: 335

4,107,675, Re. S.N. 151,606, Filed May 20, 1980, Cl. 343/65 R, TRANSPONDER-RESPONDER SYSTEM, John C. Sellers, et al., Owner of Record: *Inventors,* Attorney or Agent: Ernest I. Gifford, et al., Ex. Gp.: 222

4,133,763, Re. S.N. 143,227, Filed Apr. 24, 1980, Cl. 210/232, FILTER ASSEMBLY WITH REPLACEABLE FILTER ELEMENT, Roydon B. Cooper, Owner of Record: *Pall Corporation, Glen Cove, N.Y.,* Attorney or Agent: John R. Janes, Ex. Gp.: 176

4,150,765, Re. S.N. 136,231, Filed Apr. 1, 1980, Cl. 220/269, TAB CONSTRUCTION FOR EASY OPENING CONTAINER, Stanley L. Mazurek, Owner of Record: *The Continental Group, Inc., New York, N.Y.,* Attorney or Agent: J. E. Kerwin, et al., Ex. Gp.: 241

PATENT NOTICES

Certificates of Correction for the Week of July 29, 1980

Re. 30,264	4,171,290	4,190,788	4,198,387
D. 255,039	4,171,730	4,191,765	4,198,390
3,724,269	4,172,628	4,192,016	4,198,400
3,838,132	4,173,387	4,192,130	4,198,659
3,893,966	4,175,071	4,192,160	4,199,210
3,976,636	4,176,093	4,192,336	4,199,309
3,997,676	4,176,962	4,192,396	4,199,393
4,002,823	4,177,223	4,192,953	4,199,519
4,003,148	4,177,727	4,192,968	4,199,554
4,022,598	4,178,806	4,193,064	4,199,607
4,078,798	4,179,507	4,193,116	4,199,624
4,088,040	4,180,469	4,193,439	4,200,419
4,088,430	4,180,882	4,193,455	4,200,570
4,110,610	4,181,130	4,193,799	4,201,168
4,123,533	4,181,836	4,193,838	4,201,306
4,126,468	4,181,970	4,193,894	4,201,508
4,126,731	4,182,019	4,193,912	4,202,531
4,143,675	4,182,821	4,193,943	4,202,605
4,144,250	4,182,847	4,193,993	4,202,638
4,149,307	4,183,127	4,194,028	4,202,706
4,149,882	4,184,307	4,194,350	4,202,907
4,150,397	4,185,229	4,194,353	4,202,937
4,153,641	4,185,986	4,194,548	4,203,015
4,156,785	4,186,632	4,195,114	4,203,305
4,159,995	4,186,763	4,195,618	4,203,461
4,162,042	4,187,644	4,196,139	4,203,476
4,162,782	4,188,439	4,196,284	4,203,635
4,162,846	4,188,949	4,196,681	4,203,909
4,162,940	4,189,189	4,197,252	4,203,993
4,163,501	4,189,470	4,197,413	4,204,236
4,166,109	4,189,474	4,197,496	4,204,663
4,166,282	4,189,499	4,197,611	4,204,715
4,167,938	4,189,546	4,197,651	4,204,723
4,168,147	4,189,576	4,197,938	4,204,871
4,168,384	4,189,736	4,197,979	4,204,984
4,169,209	4,189,899	4,198,380	4,206,020
4,170,703	4,190,467		

Disclaimers

3,871,833.—*Jerome S. Spevack,* New Rochelle, N.Y. MEANS FOR IMPROVING THERMAL CONTROL IN DUAL TEMPERATURE SYSTEMS. Patent dated Mar. 18, 1975. Disclaimer filed May 29, 1980, by the assignee, *Deuterium Corporation.*

Hereby enters this disclaimer to claims 8 and 9 of said patent.

3,940,473.—*Jerome S. Spevack,* New Rochelle, N.Y. THERMAL CONTROL IN DUAL TEMPERATURE SYSTEMS. Patent dated Feb. 24, 1976. Disclaimer filed May 29, 1980, by the assignee, *Deuterium Corporation.*

Hereby enters this disclaimer to claims 20, 22, 23 and 24 of said patent.

4,150,299.—*Stanley J. Kasiewicz,* Southfield, Mich. and *James R. Van Sickle,* New Baltimore, Mich. LEVEL SENSOR FOR AN AIR-SPRING SHOCK ABSORBER. Patent dated Apr. 17, 1979. Disclaimer filed June 2, 1980, by the inventor.

Hereby enters this disclaimer to entire term of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing polices of the agency-sponsors.

Copes of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C., 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va., 22161 for $5.00 each ($10,00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a nondisclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St., SW., Washington, D.C. 20324

Patent application 6–082,355. Circuit for the Adaptive Suppression of Narrow Band Interference. Filed Oct. 5, 1979.

Patent application 6–088,504. Acetylene Terminated Matrix and Adhesive Oligomeric Compositions. Filed Oct. 26, 1979.

Patent application 6–088,505. Reactive Diluents for Acetylene Terminated Matrix and Adhesive Resins. Filed Oct. 26, 1979.

Patent application 6–090,385. Simplified Electrical Feedthrough System for Pressurized Containers. Filed Nov. 1, 1979.

Patent application 6–092,817. Slot Chevron Element for Periodic Antennas and Radomes. Filed Nov. 9, 1979.

Patent application 6–097,778. Phenylmethylpolysilane Polymers and Process for Their Preparation. Filed Nov. 27, 1979.

Patent application 6–100,179. Grease Compositions. Filed Dec. 4, 1979.

Patent application 6–100,180. Grease Compositions Based on Fluorinated Polysiloxanes. Filed Dec. 4, 1979.

Patent application 6–100,301. Fluorine-Containing Benzimidasoles. Filed Dec. 4, 1979.

Patent application 6–100,319. Depositing Optical Films of Controlled Composition. Filed Dec. 5, 1979.

Patent application 6–100,327. Purification of Acetylene-Terminated Polyimide Oligomers. Filed Dec. 5, 1979.

Patent 4,181,678. Symmetrical Perfluoroalkylene Oxide Alpha, Omega-Diacyl Fluorides. Filed Sept. 15, 1978. Patented Jan. 1, 1980. Not available NTIS.

Patent 4,181,679. Omega-Iodoperfluoroalkylene Oxide Acyl Fluorides. Filed Oct. 24, 1978. Patented Jan. 1, 1980. Not available NTIS.

Patent 4,181,681. 2-Amino-4-Ethynylphenol. Filed July 19, 1978. Patented Jan. 1, 1980. Not available NTIS.

Patent 4,184,125. Analog Tuning Voltage Circuit With Analog Signal Multiplexing. Filed July 7, 1978. Patented Jan. 15, 1980. Not available NTIS.

Patent 4,185,031. Fluorinated Phosphinic Acids. Filed Sept. 27, 1978. Patented Jan. 22, 1980. Not available NTIS.

Patent 4,185,041. Channel Sealant Compositions. Filed Sept. 2, 1977. Patented Jan. 22, 1980. Not available NTIS.

Patent 4,185,081. Procedure for the Synthesis of Stoichiometric Proportioned Indium Phosphide. Filed July 31, 1978. Patented Jan. 22, 1980. Not available NTIS.

Patent 4,185,247. Means for Reducing Spurious Frequencies in a Direct Frequency Synthesizer. Filed Jan. 3, 1978. Patented Jan. 22, 1980. Not available NTIS.

Patent 4,185,858. Secondary Seal for Tubing Joined Via V-Band Couplings. Filed June 28, 1978. Patented Jan. 29, 1980. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Program Agreements and Patent Branch, Administrative Service Division Federal Bldg., Science and Education Administration, Hyattsville, Md. 20782

Patent application 6-050,896. Polybutylbenzylphenols and Benzyl-3,4-Methylenedioxybenzenes in Insect Population Control. Filed June 21, 1979.

Patent application 6-088,665. Method and Apparatus for Background Corrected Simultaneous Multielement Atomic Absorption Analysis. Filed Oct. 26, 1979.

Patent application 6-099,813. Automatic Moisture Control for Roller Applicator. Filed Dec. 3, 1979.

Patent application 6-101,983. Device for Collecting and Transferring Particulate Material. Filed Dec. 10, 1979.

Patent 4,188,422. Shrink-Resistant Textiles Containing Polypropylene Proteinous Fiber Blend Produced by Immersing Textile in an Inert Liquid at High Temperature. Filed Sept. 30, 1977. Patented Feb. 12, 1980. Not available NTIS.

Patent 4,189,303. Method of Shrinkproofing Animal Fibers With Ozone. Filed May 10, 1978. Patented Feb. 19, 1980. Not available NTIS.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents Washington, D.C. 20545

Patent 4,148,663. Refractory Concretes. Filed June 21, 1977. Patented Apr. 10, 1979. Not available NTIS.

Patent 4,151,438. Distributed Electrical Leads for Thermionic Converter. Filed Aug. 17, 1977. Patented Apr. 24, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts., NW., Washington, D.C. 20240

Patent application 6-075,385. Open Surface Flotation Method. Filed Sept. 13, 1979.

Patent application 6-085,449. Copper Electrowinning and CR Reduction in Spent Etchants Using Porous Fixed Bed Coke Electrodes. Filed Oct. 16, 1979.

Patent application 6-085,452. Fly Ash-Based Cement. Filed Oct. 16, 1979.

Patent application 6-085,569. Self-Contained Closed Circuit Breathing Apparatus Having a Balanced Breathing Resistance System. Filed Oct. 17, 1979.

Patent application 6-087,852. Selective Removal of Mercury From Cyanide Solutions. Filed Oct. 24, 1979.

Patent application 6-090,786. Leaching Uranium Ores. Filed Nov. 2, 1979.

Patent application 6-097,751. Molybdenite Flotation. Filed Nov. 27, 1979.

Patent application 6-097,756. Siliceous Adsorbent for Heavy Metals. Filed Nov. 27, 1979.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research Code 302, Arlington, Va. 22217

Patent application 6-056,769. MHD Pinch Interrupting Switch for High Currents. Filed July 2, 1979.

Patent application 6-078,402. Mono-Substituted Phthalonitriles and Phthalocyanines. Filed Sept. 24, 1979.

Patent application 6-087,269. A Method To Determine the Shear Absorption of a Rubberlike Material. Filed Oct. 22, 1979.

Patent application 587,515. Inflatable Roadway. Filed June 16, 1975.

Patent application 652,035. A Parachute Attachment Swivel. Filed Jan. 26, 1976.

Patent application 660,308. Autopilot Hardover Failure Protection System. Filed Feb. 23, 1976.

Patent application 660,604. Timed Missile Flight Termination System. Filed Feb. 23, 1976.

Patent application 664,714. Deployable Rotor. Filed Mar. 8, 1976.

Patent application 672,195. An Acousto-Optic Q-Switch. Filed Mar. 31, 1975.

Patent application 673,180. Acousto-Optical Transducer. Filed Apr. 2, 1976.

Patent application 673,339. Method for Making Beam Leads for Ceramic Substrates. Filed Apr. 2, 1976.

Patent application 674,716. Adaptive Direction of Arrival Antennae System. Filed Apr. 8, 1976.

Patent application 674,999. Determination of Thermal Impedances of Bonding Layers in Infrared Photoconductors. Filed Apr. 8, 1976.

Patent application 676,018. Projectile Power Generator. Filed Apr. 12, 1976.

Patent application 677,182. A Method for Closing Elastomeric Tubes in the Walls of Fluid-Filled Vessels. Filed Apr. 15, 1976.

Patent application 677,191. An Electronically Variable Surface Acoustic Wave Phase Shifter. Filed Apr. 15, 1976.

Patent application 677,198. Gas Laser Starting. Filed Apr. 15, 1976.

Patent application 678,264. Improved Metal Vapor Laser Tube. Filed Apr. 19, 1976.

Patent application 678,572. Soluble Binders for Plastic Bonded Explosives and Propellants. Filed Apr. 20, 1976.

Patent application 679,310. Fiber Optics Grinding and Polishing Disc. Filed Apr. 22, 1976.

Patent application 681,665. Solid State Step Transmitter. Filed Apr. 27, 1976.

Patent application 681,864. Capacitiance Transducer for the Measurement of Bending Strains at Elevated Temperatures. Filed Apr. 30, 1976.

Patent application 953,510. Electronic Breathing Mixture Control. Filed Oct. 23, 1979.

Patent 4,153,808. Novel Prostaglandin Derivatives, Certain In Vivo and In Vitro Effects Thereof and Processes for the Preparation of Same. Filed Nov. 28, 1975. Patented May 8, 1979. Not available NTIS.

Patent 4,170,706. Method for Preparing the Bispicrate Salt of 2,3,7,8-Tetraazaspiro(4,4)Nonane. Filed Aug. 28, 1978. Patented Oct. 9, 1979. Not available NTIS.

Patent 4,173,591. Process for the Preparation of 1,3,5-Trifluoro-2,4,6-Trinitrobenzene. Filed Aug. 28, 1978. Patented Nov. 6, 1979. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626–7555 Ext. 274
	Sacramento: California State Library	(916) 322–4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
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	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242–7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 28, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-18-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-2-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-3-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	11-7-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-27-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-11-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-2-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-29-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	10-10-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-3-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	6-12-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers, Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-2-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	5-21-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	5-11-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	2-1-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during June 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,091,768 to 3,095,571, inclusive
Plant Patents..... Numbers 2,262 to 2,268, inclusive

REISSUE PATENTS

GRANTED JUL. 29, 1980

ERRATA

For CLASS	See PATENT NO.
228–056	30,348

REISSUE PATENTS

GRANTED JULY 29, 1980

ERRATA

For	Read
CLASS	PATENT NO.
225-030	30,249

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,348

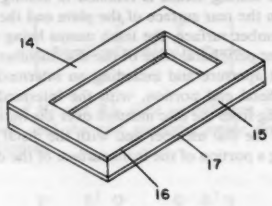
SOLDER PREFORM

Norman Hascoe, Larchmont, N.Y., assignor to Semi-Alloys, Inc., Mount Vernon, N.Y.

Original No. 4,020,987, dated May 3, 1977, Ser. No. 615,545, Sep. 22, 1975. Application for reissue Jan. 10, 1979, Ser. No. 2,325

Int. Cl.[2] B23K *35/26*; H01L *23/10*

U.S. Cl. 228—56 4 Claims



4. A solder preform comprising a relatively thick flat ring of an alloy comprising preponderantly lead and tin and having the characteristic that it solidifies from the fluid state as a homogeneous mixture and a relatively thin coating clad on each surface thereof of an oxidation-resistant alloy consisting of 92–98% tin and 2–8% silver.

Re. 30,349

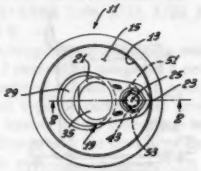
EASY-OPENING CONTAINER WALL WITH CORELINE VENT

Francis M. Silver, Dayton, Ohio, assignor to Ermal C. Fraze, Dayton, Ohio

Original No. 3,404,801, dated Oct. 8, 1968, Ser. No. 632,630, Apr. 21, 1967. Application for reissue Jan. 2, 1970, Ser. No. 10,660

Int. Cl.[2] B65D *41/32*

U.S. Cl. 220—271 56 Claims



1. In an easy-opening container wall, the combination of:

a scoreline in the container wall defining a rupturable web in the container wall, said rupturable web defining a wall segment at least partially removable from the container wall;

a tab for initiating removal of said wall segment, said tab having a *longitudinally* handle portion and a rupturing portion;

interconnecting means for attaching said tab intermediate said portions thereof to the container wall with the rupturing portion lying closely adjacent said rupturable web and being engageable with said wall segment whereby movement of said handle portion of said *longitudinally* tab away from the container wall forces said rupturing portion toward the container wall *while said tab remains longitudinally rigid*; [and]

rupturable scoreline means in the container wall adjacent said interconnecting means rupturable in response to movement of the handle portion of the tab away from the container wall *while said tab remains longitudinally rigid* to form an aperture in the container wall to facilitate continued movement of said handle portion away from the container wall *while said tab remains longitudinally rigid* whereby such continued movement of the handle portion causes said rupturing portion to initiate severance of said wall segment from the container wall along said rupturable web[.]*; and*

said longitudinally rigid tab remaining longitudinally rigid during rupture of both said scoreline and said rupturable scoreline means and during movement of the handle portion away from the container wall whereby the rupturing portion of said rigid tab bears downwardly on said container wall while lifting on said interconnecting means as said handle portion of said rigid tab is moved away from said container wall.

Re. 30,350

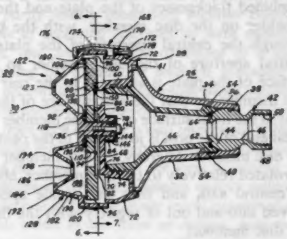
SELECTABLE MULTIPLE-NOZZLE SHOWERHEAD

Samuel F. Peterson, Chicago, Ill., and Alfons Rundzaitis, Beverly Shores, Ind., assignors to Associated Mills, Inc., Chicago, Ill.

Original No. 3,998,390, dated Dec. 21, 1976, Ser. No. 682,988, May 4, 1976. Application for reissue Dec. 20, 1977, Ser. No. 862,531

Int. Cl.[2] A62C *31/02*

U.S. Cl. 239—394 38 Claims



1. An improved showerhead having at least two spray nozzles and being adapted to be connected with a source of water under pressure and to permit the user to select the spray nozzle through which water is to be discharged, the improved showerhead comprising:

a housing including means which defines a conduit through which water may flow and having a first end and a second end which may be connected with the source of water under pressure and which communicates with the conduit means so that water from the source may flow through the conduit means;

a disc member having a front surface, a rear surface and an outer peripheral edge and being connected with the first end of the housing so that the water flowing in the conduit means communicates with the [near] *rear* surface of the disc member, the disc member having a central, circular aperture formed therein so that the central axes of the central aperture and of the disc member are coaxial and having a first, offset aperture formed therein between the central aperture and the outer peripheral edge of the disc member so that the central axis of the first aperture is parallel to the central axis of the disc member, with both

the central aperture and the first aperture extending through the disc member from its front surface to its rear surface;

a shoulder formed around the central aperture on the rear surface of the disc member and projecting rearwardly so as to define a rearward continuation of the central aperture;

a dial assembly connected with the housing and including a dial member, a plate and a seal;

the dial member having a front surface, a rear surface and an outer peripheral circular side edge that extends rearwardly from the rear surface of the dial member, the dial member also having at least two spaced, separate spray nozzles formed therein and opening forwardly therefrom so that water may be sprayed, through a spray nozzle, from the front of the dial member;

the plate having a front surface, a rear surface, an outer peripheral, circular edge whose diameter is less than the diameter of the outer peripheral edge of the dial member and whose thickness, parallel to the central axis of the plate, is less than the length of the rearward extension of the outer peripheral edge of the dial member, the plate also including a circular, central aperture whose central axis is coaxial with the central axis of the plate and offset nozzle apertures, one for each of the spray nozzles, disposed between the central axis and the outer peripheral edge of the plate so that the radial distance between the central axis of each spray aperture and the central axis of the plate is equal to the radial distance between the central axis of the first aperture and the central axis of the central aperture of the disc member;

a rearwardly projecting post formed on the rear surface of the dial member so that its central axis is coaxial with the central axis of the dial member, the post having an outer diameter substantially equal to that of the central apertures of the disc member and the plate and having a length greater than the thickness of the plate but less than the combined thicknesses of the plate and the length of the shoulder on the disc member, with the post projecting through the central aperture of the plate and into the central aperture of the disc member so that the front surface of the plate is adjacent to the rear surface of the dial member, so that the rear surface of the plate is adjacent to the front surface of the disc member and so that the distal end of the post is journaled in the central aperture of the disc member whereby the dial member and plate may be rotated relatively to the disc member, about their coaxial central axis, and thus the nozzle apertures may be moved into and out of registry with the first aperture of the disc member;

the seal being disposed between the rear surface of the dial member and the front surface of the plate for preventing leakage therebetween;

means for preventing relative movement between the dial member and the plate and for aligning each offset aperture of the plate with a spray nozzle;

means mounted in the distal end of the post for biasing the dial assembly rearwardly with respect to the disc member;

sealing means for preventing water from leaking between the rear surface of the plate and the front surface of the disc member when the first aperture and a nozzle aperture are in registry, the sealing means being mounted on the front surface of the disc member and disposed between the rear surface of the plate and the front surface of the disc member, the sealing means including a first portion, a second portion and a third portion, with the first portion of the sealing means extending completely around the first aperture, with the second portion of the sealing means extending from the first portion in one direction along the path of travel of the nozzle apertures, as the dial assembly is moved with respect to the disc member, and defining a first isolated area which is generally similar in shape and dimensions to the shape and dimensions of the nozzle apertures in the plate so that when a nozzle aperture in the plate is positioned adjacent to one side of but not in fluid communication with the first aperture, the second portion of the sealing means is disposed about the nozzle aperture, and with the third portion of the sealing means extending, from the first portion in the other direction along the path of travel and defining a second isolated area which is generally similar in shape and dimensions to the shape and dimensions of the nozzle apertures in the plate so that when a nozzle aperture in the plate is positioned adjacent to the other side of but not in fluid communication with the first aperture, the third portion of the sealing means is disposed about the nozzle aperture; and

means for latching the dial assembly to the disc member so that the rear surface of the plate is retained in position adjacent to the front surface of the disc member and so that the sealing means is retained in sealing relationship between the rear surface of the plate and the front of the disc member surface, the latch means being mounted on the outer peripheral edge of the disc member adjacent to the first aperture and including an intermediate portion and a distal end portion, with the intermediate portion extending from the disc member over the outer peripheral edge of the dial member and with the distal end portion abutting a portion of the front surface of the dial member.

Re. 30,351

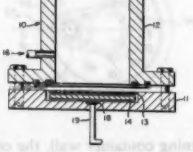
AROMATIC POLYIMIDE, POLYESTER AND POLYAMIDE SEPARATION MEMBRANES

Harvey H. Hoehn, Hockessin, Del., and John W. Richter, Kennett Square, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Original No. 3,899,309, dated Aug. 12, 1975, Ser. No. 322,800, Jan. 11, 1973. Continuation-in-part of Ser. No. 273,802, Jul. 20, 1972, abandoned. Application for reissue May 18, 1976, Ser. No. 687,639

Int. Cl.[2] **B01D** *53/22, 31/00*

U.S. Cl. 55—16 **24 Claims**



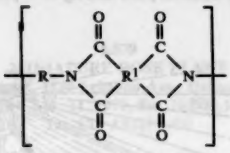
1. The process of separating [fluids] *a mixture of gases* using a semipermeable membrane of which at least 50% by weight consists essentially of a polymer whose main chain has a repeating unit containing at least one group selected from the group consisting of aromatic imide, aromatic ester and aromatic amide groups, in which said repeating unit

(a) contains at least one rigid divalent subunit, the two main chain single bonds extending from which are not colinear,

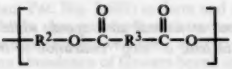
(b) is sterically unable to rotate 360° around one or more of said main chain single bonds, and

(c) has more than 50% of its main chain atoms in aromatic groups,

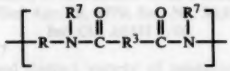
the said aromatic imide repeating unit having the formula



R and R^1 are, respectively, a divalent and tetravalent organic radical, the said aromatic ester repeating unit having the formula



wherein each of R^2 and R^3, alike or different, is a divalent organic radical, and the said aromatic amide repeating unit having the formula



wherein R and R^3 are as defined above and R^7 is hydrogen, lower alkyl or phenyl.

Re. 30,352

OPTICALLY ANISOTROPIC AROMATIC POLYAMIDE DOPES

Stephanie L. Kwolek, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Original No. 3,671,542, dated Jun. 20, 1972, Ser. No. 827,345, May 23, 1969. Continuation-in-part of Ser. No. 736,410, Jun. 12, 1968, abandoned, which is a continuation-in-part of Ser. No. 644,851, Jun. 9, 1967, abandoned, which is a continuation-in-part of Ser. No. 556,934, Jun. 13, 1966, abandoned. Application for reissue Oct. 12, 1978, Ser. No. 951,051

The portion of the term of this patent subsequent to Jun. 20, 1999, has been disclaimed.

Int. Cl.[2] C08K *3/06, 3/16, 5/20, 5/21*

U.S. Cl. 260—30.8 R **2 Claims**

1. Optically anisotropic dope consisting essentially of:

I. at least about 5 percent by weight of a polymer having an inherent viscosity of at least 0.7 and consisting essentially of at least one type of carbocyclic aromatic homo- or copolyamide having chain extending bonds from each aromatic nucleus which are coaxial or parallel and oppositely directed, and

II. at least one liquid medium selected from the group consisting of:

A. amides and ureas selected from the group consisting of: N,N-dimethylacetamide, N,N-dimethylpropionamide, N,N-dimethylbutyramide, N,N-dimethylisobutyramide, N,N-dimethylmethoxyacetamide, N,N-diethylacetamide, N-methylpyrrolidone-2, N-methylpiperidone-2, N-methylcaprolactam, N-ethylpyrrolidone-2, [N-acetylpyrrolidone] *N-acetylpyrrolidine,* N-acetylpiperidine, N,N′-dimethylethyleneurea, N,N′-dimethylpropyleneurea hexamethylphosphoramide, and N,N,N′,N′-tetramethylurea and containing a salt from the group consisting of lithium chloride and calcium chloride

B. concentrated sulfuric acid,

C. hydrofluoric acid, and

D. chloro-, fluoro- or methane-sulfonic acids, said polymer being present in the dope in a concentration above the level at which there is a decrease in viscosity with increasing concentration represented by a sharp discontinuity in the slope of the plot of the dope viscosity vs. polymer concentration curve without the formation of a solid phase.

Re. 30,353

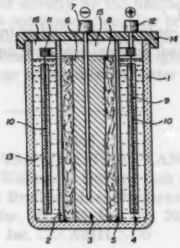
ELECTRIC ACCUMULATOR WITH A SOLID ELECTROLYTE

Michel Voinov, Geneva, Switzerland, assignor to Batelle Development Corporation, Columbus, Ohio

Original No. 4,069,372, dated Jan. 17, 1978, Ser. No. 746,108, Nov. 30, 1976. Application for reissue Feb. 9, 1978, Ser. No. 876,427

Int. Cl.[3] H01M *6/30*

U.S. Cl. 429—104 **11 Claims**



3. [The accumulator of claim 1,] *An electric accumulator comprising an anode compartment containing an anode formed from at least one metal selected from the group consisting of metals belonging to Groups Ia, IIa, IIb and IIIb of the periodic table of elements; a cathode compartment containing a cathode formed at least partly from a conducting member comprising a substance capable of accepting electrons, to form anions by cathodic reduction, and an electrolyte consisting of a substance capable of dissolving the product or products generated during discharge of the accumulator, said electrolyte being maintained in a molten state; the anode compartment and cathode compartment being separated from each other by a wall impervious to fluids and formed from a solid mineral electrolyte capable of allowing selective migration of the anode metal in the form of cations; wherein the anode compartment contains a porous matrix adjacent said anode and at least one salt of the anode metal capable of allowing migration of this metal in the form of cations, said salt being maintained in a molten state and permeating said porous matrix, with said salt and said matrix being interposed between the anode and said separation wall, and* wherein said anode metal salt is selected from the group consisting of compounds of the two general formulas:

$$Me(BR_4)_n \text{ and } Me(AlR_4)_n$$

(in which Me represents a metal selected from the group consisting of metals belonging to Groups Ia, IIa, IIb and IIIb of the periodic table of elements, R represents an alkyl or aryl group and n is 1, 2 or 3, according to the valency of the metal Me) and mixtures of at least two of these compounds.

Re. 30,354

NOVEL ETHEREALLY MONOSUBSTITUTED MONOSACCHARIDES

Paul Gordon, Chicago, Ill., assignor to Strategic Medical Research Corp., Greenwich, Conn.

Original No. 3,939,145, dated Feb. 17, 1976, Ser. No. 337,134, Mar. 1, 1973. Application for reissue Feb. 17, 1978, Ser. No. 878,938

Int. Cl.[2] C07H *15/12, 17/02*

U.S. Cl. 536—4 **38 Claims**

25. An ethereally monosubstituted monosaccharide having the

formula S-O-Y, and therapeutically effective and acceptable organic and inorganic acid salts thereof, wherein S is the residue of a monosaccharide selected from the group consisting of pentoses, hexoses and heptoses and Y is selected from the group consisting of N',N'-dimethylamino-n-propyl, N',N'-dimethylaminoisopropyl, N-methyl piperidyl, N',N'-dimethylaminoethyl, and 2',N',N'-trimethylamino-n-propyl.

Re. 30,355

TRAFFIC FLOW CONTROL SYSTEM

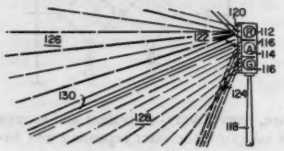
Moody L. Coffman, 1832 NW. 17th St., Oklahoma City, Okla. 73106

Original No. 3,533,062, dated Oct. 6, 1970, Ser. No. 606,828, Jan. 3, 1967. Application for reissue Oct. 4, 1972, Ser. No. 294,882

Int. Cl.[2] **G08G** *1/07, 1/095*

U.S. Cl. 340—40 **19 Claims**

19. Method of controlling stop-and-go traffic in a control zone from a traffic signal adjacent said zone and having a view lens, comprising displaying at said lens a "go" indication to traffic at sufficiently short distances from said signal to permit safe transit through said zone at normal zone speed, while simultaneously displaying at said lens, a "stop" indication to traffic at greater distances.



PLANT PATENTS

GRANTED JULY 29, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,579
MINIATURE ROSE PLANT
Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208
Filed Apr. 11, 1979, Ser. No. 29,142
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bush, rounded, much branched, habit, substantially as illustrated and described, characterized by buds and flowers of a red and white bi-color, with the red coloring on top side of petal, being of a shade generally near Crimson 22 or lighter, the bud and flower resembling the variety Magic Carrousel (U.S. Plant Pat. No. 3,601) in form and color but being generally smaller in size; and further characterized by a plant of vigorous and compact growth habit, easy to propagate from cuttings, with an abundance of flowers borne singly and sometimes several together.

4,580
MINIATURE ROSE PLANT
Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208
Filed Apr. 18, 1979, Ser. No. 30,996
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded, much branched habit, substantially as illustrated, and described, characterized by buds and flowers of a rich yellow color, being of a shade generally near Saffron Yellow 7/2 or Buttercup Yellow 5/2 or lighter, the yellow color remaining on lower petal surface but the upper surfaces tending to become overlaid (beginning at petal tips) with orange red and becoming deep red at maturity, the bud and flower resembling the variety Over The Rainbow (U.S. Plant Pat. No. 3,472) in general form and size and the Floribunda variety Circus (U.S. Plant Pat. No. 1,382, expired) in coloring; and further characterized by a plant of vigorous and compact growth habit, easy to propagate from cuttings, with an abundance of small to medium size — semi-glossy foliage and an abundance of flowers usually borne singly but sometimes several together.

4,581
MINIATURE ROSE PLANT
Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208
Filed Apr. 27, 1979, Ser. No. 33,845
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded, much branched habit, substantially as illustrated and described, characterized by buds and flowers which are of an orange or orange blend coloring, the buds and flowers resembling Gloriglo (Miniature — U.S. Plant Pat. No. 4,305) in size and color, the present variety having more petals, and a more compact plant habit, the mature flowers often aging quite red in cooler weather; and further characterized by a plant which is easy to propagate from soft wood cuttings, with an abundance of flowers usually borne singly on slender wirey stems.

4,582
ROSE PLANT
F. Harmon Saville, 58 Hammond St., Rowley, Mass. 01969
Filed May 4, 1979, Ser. No. 36,004
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as shown and described, characterized particularly by unusual bicolor flowers with red to orange-red upper petal surface and yellow to yellow-orange reverse, borne primarily one to a stem on a vigorous plant with attractive foliage.

4,583
ROSE PLANT
O. L. Weeks, 926 W. Philadelphia, Ontario, Calif. 91761
Continuation of Ser. No. 848,724, Nov. 4, 1977, abandoned. This application Mar. 22, 1979, Ser. No. 22,968
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—12 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of inside petals of a dark red shade of peculiar brightness and life, with reverse of the petals yellowish cream producing a bicolor effect, with long, tapered formal buds, upright, tall plant habit, and waxy shiny foliage with generally better growth than the parents.

4,584
CHRYSANTHEMUM PLANT
Jack M. Meek, and William E. Duffett, both of Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed Mar. 15, 1979, Ser. No. 20,773
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant as shown and described, known by the cultivar name Lodestar and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; spooned daisy capitulum type; dark yellow ray floret color; diameter across face of capitulum ranging from 70 to 75 mm at maturity; uniform eight week photoperiodic flowering response to short days; short plant height when grown as a pinched spray pot, and spreading branching pattern.

4,585
CHRYSANTHEMUM PLANT
Jack M. Meek, and William E. Duffett, both of Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed Mar. 8, 1979, Ser. No. 18,484
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant as shown and described, known by the cultivar name Surf and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; white ray floret color; diameter across face of capitulum ranging from 65 to 95 mm. at maturity; uniform eight week flowering response; short plant height, and semi-spreading branching pattern.

4,586
CHRYSANTHEMUM PLANT
Jack M. Meek, and William E. Duffett, both of Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed Mar. 15, 1979, Ser. No. 20,772
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant as shown and described, known by the cultivar name Applause and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; pompon capitulum type; yellow green (immature) to dark yellow (mature) ray floret color; diameter across face of capitulum ranging from 35 to 50 mm at maturity; uniform eight week photoperiodic flowering response to short days; short plant height when grown as a pinched spray pot, and semi-spreading branching pattern.

GRANTED JULY 29, 1969

4,599

MINIATURE ROSE PLANT

Byron D. Williams, 1110 Cedarcrest Ave., Dallas, Tex. 75208

Filed Apr. 15, 1968, Ser. No. 20,941

Int. Cl. A01H 5/00

U.S. Cl. PP.—7 1 Claim

A new and distinct variety of miniature rose plant of bushy, dwarf, multi-flowered, semi-climbing habit, substantially thornless and descended from parents characterized by buds and flowers of a red and white blend, with the red coloring on the rear of petal, fading to a steady pink near Crimson 12 on Figure The Horticulture Color Chart of the Royal Horticultural Society, London, England, and producing the variety Cupcake. Plant No. 3,801 is more and more for being primarily similar to the parent variety but differing in the color of opening and mature flowers, with its abundance of flower stems longer and more erect together.

4,600

MINIATURE ROSE PLANT

Byron D. Williams, 1110 Cedarcrest Ave., Dallas, Tex. 75208

Filed Apr. 15, 1968, Ser. No. 20,942

Int. Cl. A01H 5/00

U.S. Cl. PP.—7 1 Claim

A new and distinct variety of miniature rose plant of bushy, dwarf, semi-climbing habit, substantially thornless, and descended from parents characterized by buds and flowers of a red color, with the red coloring on the rear of petal, fading to a steady pink near Crimson 12 on Figure The Horticulture Color Chart of the Royal Horticultural Society, London, England, and producing the variety Cupcake. Plant No. 3,801 is more and more for being primarily similar to the parent variety but differing in the color of opening and mature flowers, with its abundance of flower stems longer and more erect together.

4,601

MINIATURE ROSE PLANT

Byron D. Williams, 1110 Cedarcrest Ave., Dallas, Tex. 75208

Filed Apr. 15, 1968, Ser. No. 20,943

Int. Cl. A01H 5/00

U.S. Cl. PP.—7 1 Claim

A new and distinct variety of miniature rose plant of bushy, dwarf, semi-climbing habit, substantially thornless, and descended from parents characterized by buds and flowers of a red color, with the red coloring on the rear of petal, fading to a steady pink near Crimson 12 on Figure The Horticulture Color Chart of the Royal Horticultural Society, London, England, and producing the variety Cupcake. Plant No. 3,801 is more and more for being primarily similar to the parent variety but differing in the color of opening and mature flowers, with its abundance of flower stems longer and more erect together.

4,602

SOFT PEA PLANT

Paul M. Miles, and William C. Dahlin, both of Salinas, Calif., assignors to Tyler Brothers, Inc., Riverside, Calif.

Filed June 13, 1968, Ser. No. 20,772

Int. Cl. A01H 5/00

U.S. Cl. PP.—74 1 Claim

A new and distinct cultivar of Conquistador Rizzoni, plant as shown and described, known by the cultivar name Lincoln and particularly characterized as to novelty by the combination of characteristics of the vegetative plant, growth habit, growth type, dark yellow pod fleck, pod dimensions across face of cotyledon, ripening time of 73 to 75 days to mature, uniform high seed production, shelling percentage of about 50 percent, short plant length when grown at a population density of about 2 million plants per acre, and resistance to powdery mildew.

4,603

CHRYSANTHEMUM PLANT

Paul M. Miles, and William C. Dahlin, both of Salinas, Calif., assignors to Tyler Brothers, Inc., Riverside, Calif.

Filed June 13, 1968, Ser. No. 20,773

Int. Cl. A01H 5/00

U.S. Cl. PP.—77 1 Claim

A new and distinct cultivar of Chrysanthemum morifolium Ramat., plant as shown and described, known by the cultivar name Lincoln and particularly characterized as to novelty by the combination of characteristics of the vegetative plant, growth habit, growth type, dark yellow pod fleck, pod dimensions across face of cotyledon, ripening time of 73 to 75 days to mature, uniform high seed production, shelling percentage of about 50 percent, short plant length when grown at a population density of about 2 million plants per acre, and resistance to powdery mildew.

4,604

CHRYSANTHEMUM PLANT

Paul M. Miles, and William C. Dahlin, both of Salinas, Calif., assignors to Tyler Brothers, Inc., Riverside, Calif.

Filed June 13, 1968, Ser. No. 20,774

Int. Cl. A01H 5/00

U.S. Cl. PP.—77 1 Claim

A new and distinct cultivar of Chrysanthemum morifolium Ramat., plant as shown and described, known by the cultivar name Lincoln and particularly characterized as to novelty by the combination of characteristics of the vegetative plant, growth habit, growth type, dark yellow pod fleck, pod dimensions across face of cotyledon, ripening time of 73 to 75 days to mature, uniform high seed production, shelling percentage of about 50 percent, short plant length when grown at a population density of about 2 million plants per acre, and resistance to powdery mildew.

4,605

ROSE PLANT

G. L. Weeks, and W. Blackmore, Chatsworth, Calif., assignors to Jackson & Perkins Co., Newark, N.Y., a corp. of New York

Filed Mar. 25, 1968, Ser. No. 20,787

Int. Cl. A01H 5/00

U.S. Cl. PP.—77 1 Claim

A new and distinct variety of climbing rose plant of vigorous habit, with dark green foliage and large, double, high centered flowers of a deep pink color, which are borne in clusters of 3 to 5 blooms on long, rigid stems with few prickles, and which are very slow to fade.

4,606

CHRYSANTHEMUM PLANT

Jack M. Mack, and William E. Dahlin, both of Salinas, Calif., assignors to Tyler Brothers, Inc., Riverside, Calif.

Filed June 13, 1968, Ser. No. 20,775

Int. Cl. A01H 5/00

U.S. Cl. PP.—74 1 Claim

A new and distinct cultivar of Chrysanthemum Ramat., plant as shown and described, known by the cultivar name Lincoln and particularly characterized as to novelty by the combination of characteristics of the vegetative plant, growth habit, growth type, dark yellow pod fleck, pod dimensions across face of cotyledon, ripening time of 73 to 75 days to mature, uniform high seed production, shelling percentage of about 50 percent, short plant length when grown at a population density of about 2 million plants per acre, and resistance to powdery mildew.

4,607

CHRYSANTHEMUM PLANT

Paul M. Miles, and William C. Dahlin, both of Salinas, Calif., assignors to Tyler Brothers, Inc., Riverside, Calif.

Filed June 13, 1968, Ser. No. 20,776

Int. Cl. A01H 5/00

U.S. Cl. PP.—77 1 Claim

A new and distinct cultivar of Chrysanthemum morifolium Ramat., plant as shown and described, known by the cultivar name Lincoln and particularly characterized as to novelty by the combination of characteristics of the vegetative plant, growth habit, growth type, dark yellow pod fleck, pod dimensions across face of cotyledon, ripening time of 73 to 75 days to mature, uniform high seed production, shelling percentage of about 50 percent, short plant length when grown at a population density of about 2 million plants per acre, and resistance to powdery mildew.

4,608

CHRYSANTHEMUM PLANT

Paul M. Miles, and William C. Dahlin, both of Salinas, Calif., assignors to Tyler Brothers, Inc., Riverside, Calif.

Filed June 13, 1968, Ser. No. 20,777

Int. Cl. A01H 5/00

U.S. Cl. PP.—77 1 Claim

A new and distinct cultivar of Chrysanthemum morifolium Ramat., plant as shown and described, known by the cultivar name Lincoln and particularly characterized as to novelty by the combination of characteristics of the vegetative plant, growth habit, growth type, dark yellow pod fleck, pod dimensions across face of cotyledon, ripening time of 73 to 75 days to mature, uniform high seed production, shelling percentage of about 50 percent, short plant length when grown at a population density of about 2 million plants per acre, and resistance to powdery mildew.

4,609

MINIATURE ROSE PLANT

Byron D. Williams, 1110 Cedarcrest Ave., Dallas, Tex. 75208

Filed Apr. 15, 1968, Ser. No. 20,944

Int. Cl. A01H 5/00

U.S. Cl. PP.—7 1 Claim

A new and distinct variety of miniature rose plant of bushy, dwarf, semi-climbing habit, substantially thornless, and descended from parents characterized by buds and flowers of a red color, with the red coloring on the rear of petal, fading to a steady pink near Crimson 12 on Figure The Horticulture Color Chart of the Royal Horticultural Society, London, England, and producing the variety Cupcake. Plant No. 3,801 is more and more for being primarily similar to the parent variety but differing in the color of opening and mature flowers, with its abundance of flower stems longer and more erect together.

4,610

MINIATURE ROSE PLANT

Byron D. Williams, 1110 Cedarcrest Ave., Dallas, Tex. 75208

Filed Apr. 15, 1968, Ser. No. 20,945

Int. Cl. A01H 5/00

U.S. Cl. PP.—7 1 Claim

A new and distinct variety of miniature rose plant of bushy, dwarf, semi-climbing habit, substantially thornless, and descended from parents characterized by buds and flowers of a red color, with the red coloring on the rear of petal, fading to a steady pink near Crimson 12 on Figure The Horticulture Color Chart of the Royal Horticultural Society, London, England, and producing the variety Cupcake. Plant No. 3,801 is more and more for being primarily similar to the parent variety but differing in the color of opening and mature flowers, with its abundance of flower stems longer and more erect together.

4,611

MINIATURE ROSE PLANT

Byron D. Williams, 1110 Cedarcrest Ave., Dallas, Tex. 75208

Filed Apr. 15, 1968, Ser. No. 20,946

Int. Cl. A01H 5/00

U.S. Cl. PP.—7 1 Claim

A new and distinct variety of miniature rose plant of bushy, dwarf, semi-climbing habit, substantially thornless, and descended from parents characterized by buds and flowers of a red color, with the red coloring on the rear of petal, fading to a steady pink near Crimson 12 on Figure The Horticulture Color Chart of the Royal Horticultural Society, London, England, and producing the variety Cupcake. Plant No. 3,801 is more and more for being primarily similar to the parent variety but differing in the color of opening and mature flowers, with its abundance of flower stems longer and more erect together.

4,612

SOFT PEA PLANT

P. Thomas Tinsley, 59 Hammond Rd., Shirley, Mass. 01464

Filed May 6, 1968, Ser. No. 20,826

Int. Cl. A01H 5/00

U.S. Cl. PP.—7 1 Claim

A new and distinct variety of pea plant of the edible-podded type, substantially as shown and described, characterized by its vigorous and productive bushy growth habit and its tender, green, edible pods.

PATENTS

GRANTED JUL. 29, 1980

ERRATA

For CLASS	See PATENT NO.
433–189	4,214,366
433–060	4,214,367
368–028	4,214,433
368–071	4,214,434
474–148	4,214,488
440–013	4,214,547
052–726	4,214,665
339–274	4,214,733
430–082	4,214,907
568–461	4,215,076
568–454	4,215,077
375–114	4,215,239
370–116	4,215,244
370–084	4,215,245
455–612	4,215,269
375–005	4,215,311
455–284	4,215,312
455–326	4,215,313
371–069	4,215,335
370–097	4,215,348
340–695	4,215,349

PATENTS

GRANTED JULY 29, 1980

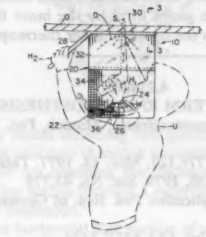
ERRATA

PATENTS

GRANTED JULY 29, 1980

GENERAL AND MECHANICAL

4,214,317
PROTECTIVE APPAREL
Thomas E. Kelly, Sr., 14202 Baldwin Mill Rd., Baldwin, Md. 21013
Filed Feb. 2, 1979, Ser. No. 8,883
Int. Cl.[3] A41D *13/08*; A61F *9/06*
U.S. Cl. 2—2 **5 Claims**



1. In an article of apparel for protecting a user from debris resultant to overhead operation of a tool held in a first hand of a user including a sleeve having upper and lower portions, means for retaining the sleeve lower portion around a first hand of a user, and means for spreading the sleeve upper portion around a said overhead operation, the improvement comprising: the sleeve having means for providing protective visual access through an area thereof to said overhead operation, including a transparent flexible upper part extending substantially around the sleeve; the sleeve having means for preventing debris from being blown out of the sleeve as result of motion of said a user's first hand during said overhead operation of a tool including the sleeve having a lower filter-type flexible porous part extending substantially around the sleeve, said pores having proportion for passage of air while retaining debris within the sleeve; and said means for spreading the sleeve including a handle having orientation for grasping by a second hand of a user.

4,214,318
PORTABLE ROLL-UP BUG NETTING EMPLOYING INTEGRAL STORAGE ENVELOPE
Manuel D. Gomez, 935 E. Morning Star, Tempe, Ariz. 85283
Filed May 21, 1979, Ser. No. 40,731
Int. Cl.[3] A42B *3/00, 5/00*
U.S. Cl. 2—4 **2 Claims**

1. A head screen comprising:

a protective veil formed of an open-ended cylindrical like small mesh plastic screening having a mesh size which prohibits mosquitos from passing therethrough,

an elastic band formed around one end of said screening,

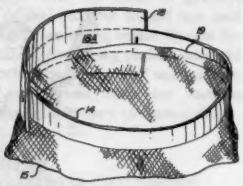
said band being positionable around the crown of a hat of a user,

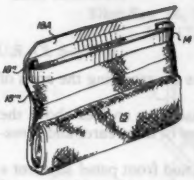
a tie string being mounted around the other end of said screening for snugly fastening said other end around the neck of the user,

a strip of pliable material attached to said band at said one end to extend outwardly of said band and inwardly thereof over a part of said band and said screening,

said material being provided with spaced fold lines extending longitudinally of its length for aiding in folding it over on itself with the veil folded and lying along one of its surfaces,

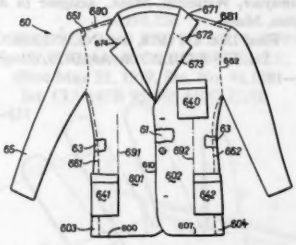
whereby when said screening is folded laterally thereof to the length of said material and then longitudinally thereof to lie over at least a part of said material, said material then may be folded over said screening along said fold lines to form an overlapping covering therefor, and





a fastening means secured to another side of said material for detachably interconnecting the overlapped portions of said material to form a packet for said veil.

4,214,319
OUTERWEAR GARMENT ARTICLE
Didier Bollag, Josefstrasse 59, CH-8005 Zurich, Switzerland
Filed Sep. 18, 1978, Ser. No. 943,527
Claims priority, application Switzerland, Oct. 6, 1977, 12203/77
Int. Cl.[2] A41D *1/02*
U.S. Cl. 2—108 **12 Claims**



1. In an outerwear garment article of the type comprising two front parts and a dorsal connecting part; each of said front parts having a terminal front edge seam and a side seam joining each of said front parts with said dorsal connecting part; the improvement wherein each of said front parts comprises two substantially coextensive cloth layers extending from said front edge seam to said side seam and being adhesively connected to form a drapeably structured composite stratum between said terminal front edge seam and said side seam.

4,214,320

SURGICAL GOWN AND METHOD OF DONNING GOWN

Nathan L. Belkin, Huntington, N.Y., assignor to Superior Surgical Mfg. Co., Inc., Seminole, Fla.

Filed Jan. 11, 1979, Ser. No. 2,947
Int. Cl.[2] A41D 13/00
U.S. Cl. 2—114 14 Claims

1. A surgical gown comprising:

first and second elongated sleeves for receiving the arms of the wearer;

a front panel extending lengthwise from an area above the chest to an area below the knees of the wearer and crosswise between the two sleeves;

an extended side panel adjoining said front panel adjacent a first sleeve and along the length of one side, said side panel including an enlarged opening in the upper end having a shoulder band enclosing the outer perimeter of said opening, said opening being sufficiently large to receive the length of the upper arm between the shoulder and elbow of the wearer, said side panel being of sufficient width to extend completely around the back and overlap a portion of the front panel to enclose the body of the wearer;

said shoulder band being disposed over the shoulder on the opposite side in a closed position and said second sleeve extending throught said opening; and

said shoulder band coacting with the shoulder and said second sleeve on the opposite side to position the hanging lower portion of the elongated panel edge in overlapping relation to the front panel of the gown to maintain the gown in a closed position.

4,214,321

GLOVE FOR USE WITH ORGANIC SOLVENTS

Elie S. Nuwayser, Wellesley, Mass., assignor to Abcor, Inc., Wilmington, Mass.

Filed Dec. 21, 1978, Ser. No. 971,800
Int. Cl.[2] B32B 27/06; A41D 19/00
U.S. Cl. 2—167 5 Claims

1. A glove adapted for use with organic solvents and other chemicals, which glove is composed of a flexible multilaminate sheet material in glove form, wherein the sheet material comprises a multilaminate sheet material consisting essentially of:

(a) an outer, flexible, solvent resistant abrasion-resistant polymer layer comprising a fluorocarbon resin or a plasticized polyester resin;

(b) an integral essentially pin-hole-free, extruded or rolled, aluminum-foil, flexible material having a thickness of at least about 0.5 to 3 mils; and

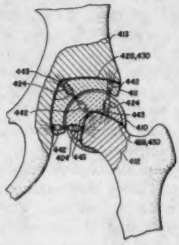
(c) an inner heat-sealable thermoplastic polymer material comprising a polyethylene or polypropylene resin, the multilaminate sheet material heat-sealed along the peripheral edges of the glove form by the inner thermoplastic polymer layer to the opposite inner thermoplastic layer.

4,214,322

LONG-TERM ENDOPROSTHESIS

Werner Kraus, 41 Augustenstrasse, Munich, Fed. Rep. of Germany

Division of Ser. No. 779,127, Mar. 18, 1977. This application May 30, 1979, Ser. No. 43,775
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1976, 2611744
Int. Cl.[2] A61F 1/24
U.S. Cl. 3—1.91 5 Claims



1. A long-term endoprosthesis comprising, in combination, a body member for implanting in the bone of a person, said body member having an outer surface configured for intimate contact with the bone in which said body member is implanted, a conductor wound on said body member having turns disposed in closely spaced relationship within the major portion of the area of contact between said body member outer surface and the bone, and means for coupling said wound conductor to an associated source of alternating electric power to produce an electomotive force in said wound conductor resulting in a voltage difference between the turns of said wound conductor at least some of the turns of said wound conductor being adapted to form electrodes for enhancing the growth of new bone in said area of contact, said associated source of alternating electric power comprising a permanent magnet movable with respect to said wound conductor forming said electrodes.

4,214,323

RAISED TOILET SEAT APPARATUS

Morton I. Thomas, Nyack, N.Y., assignor to Temco Products, Inc., Passaic, N.J.

Filed Aug. 16, 1978, Ser. No. 934,081
Int. Cl.[2] A47K 13/00, 13/08, 13/26
U.S. Cl. 4—237 6 Claims

1. An improved raised toilet seat apparatus adapted to fit on a conventional commode of the type having a bowl and a hinged toilet seat connected to said bowl by two threaded mounting bolt means, said apparatus comprising:

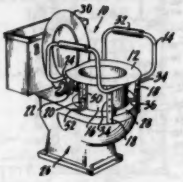
a seat;

a splash guard connected to said seat;

a plurality of support bracket means connected to said seat

for contacting said bowl and supporting said seat above said bowl;

at least two spaced apart L-shaped bracket means connected to said seat for stabilizing said apparatus, said L-shaped bracket means including an upright section connected to said seat and a horizontal foot section connected to said upright section; and,



locking bar means including two aperture means therein for receiving said two threaded mounting bolts of said commode and for spanning the distance therebetween, said locking bar means forming a receiving gap between itself and said commode,

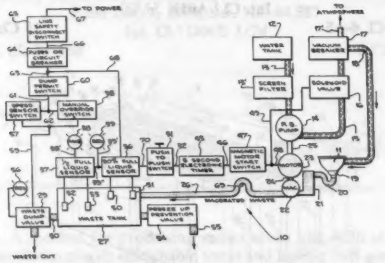
wherein the horizontal foot section of said L-shaped bracket means has a thickness slightly less than said receiving gap between said locking bar means and said commode.

4,214,324

HUMAN WASTE STORAGE AND DISPOSAL SYSTEMS FOR RAILROADS OR THE LIKE

James M. Kemper, Sherman Oaks, and William I. Mercer, West Hills, both of Calif., assignors to Monogram Industries, Inc., Santa Monica, Calif.

Filed Aug. 18, 1978, Ser. No. 935,065
Int. Cl.[2] E03D *9/10*
U.S. Cl. 4—300 **6 Claims**



1. A human waste disposal system for a vehicle or the like comprising:

at least one toilet bowl;

a waste discharge outlet coupled to said bowl;

a flushing fluid inlet coupled to both said bowl and a source of flushing fluid;

an elongated vertically mounted receiver coupled directly to said outlet for receiving a mixture of waste and flushing fluid from said bowl, said outlet being coupled to said receiver at the top thereof

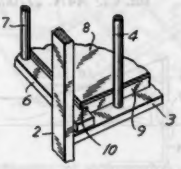
macerator vacuum pumping means comprising a vacuum pump grinder and a motor having a rotatable motor shaft coupled to said pump grinder for actuating the same, said grinder including a positive displacement vacuum pump actuated by said motor shaft having a slurry discharge outlet and an inlet, an apertured plate closing off the inlet of said pump with said motor shaft extending through said plate, a collector housing for receiving said mixture therein having an inlet coupled to said receiver and an outlet coupled to said pump inlet with said plate separating said pump from said collector housing, a cutting blade fixed to the shaft of said motor and rotatable over said apertured plate on the side of said plate adjacent said collector housing, and blade biasing means associated with said motor and said motor shaft for biasing said blade against said plate, and said macerator vacuum pumping means being connected directly to said receiver at the bottom thereof for creating a vacuum whereby atmospheric pressure, combined with the force of gravity, pushes said mixture out of said receiver to and into said pumping means, said receiver including means therein for controlling the quantity of mixture being pushed into said pumping means while storing the remainer of said mixture adjacent said pumping means, said macerator vacuum pumping means macerating said mixture to form a slurry.

4,214,325

DISMOUNTABLE FRAME FOR CHILDREN'S FURNITURE

Carlos J. Camacho, Barcelona, Spain, assignor to Forminfan, S.A., Granollers

Filed Sep. 18, 1978, Ser. No. 943,215
Int. Cl.[2] A47C *27/08*
U.S. Cl. 5—99 B **2 Claims**



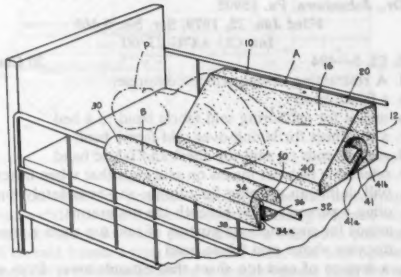
1. An improved collapsable frame assembly for furniture, of the type employing a rectangular enclosure formed by four independent side members, said side members are fixed together but detachable from each other and a base member, said improvement comprising: the base is made up of two co-planar sections which on two opposing edges are provided with tongues, in the continuous plane for support and abutting against respective lower side beams of two opposite side members, said lower side beams of the other two side members formed to support the corresponding edges of base panels whose edges butt against the bars of the said members providing rigidity to the entire frame.

4,214,326

BODY POSITIONER AND PROTECTION APPARATUS

Donald C. Spann, 5 Ferncreek Crt., Greenville, S.C.

Filed May 31, 1979, Ser. No. 44,180
Int. Cl.[3] A47B *96/00*; A47C *21/00*
U.S. Cl. 5—431 **6 Claims**



1. Apparatus for positioning and protecting the body of a

patient lying laterally upon a hospital bed and the like of the type having an upright side frame, said apparatus comprising:

an elongated body positioner block constructed from a resilient material having a length substantially greater than its width for stably supporting a substantial portion of the patient's lateral body length;

a removable elongated core formed and cut out in the interior of said elongated block;

longitudinal internal channel means formed in said core; and

opening means formed in the outside of said core communicating with said channel means accommodating placement of said elongated core over an edge of said side frame;

whereby said elongated core may be selectively removed from said body positioner block and utilized as a protective cushion guarding said patient's body from forceful contact with said side frame of said bed while said elongated body positioner may be utilized to position a patient in said bed.

4,214,327

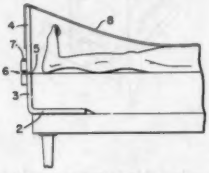
BLANKET SUPPORT AND FOOTREST

Phyllis Smith, 3507 North Dr., Greenville, Ohio 45331

Filed Dec. 28, 1978, Ser. No. 974,027

Int. Cl.[2] A47C *21/00*

U.S. Cl. 5—444 **6 Claims**



1. A blanket support and footrest, which includes:

a lower portion comprising a bottom and a side which is rigidly connected to said bottom, and is substantially perpendicular thereto, so that said lower portion has an essentially L-shaped cross section;

a flat upper portion pivotally connected to said side of said lower portion; and

means operatively connected to said upper and lower portions for selectively

(a) holding said upper portion upright in alignment with said side so that said upper portion forms an extension of said side, and

(b) releasing said upper portion to allow same to be folded toward said side.

4,214,328

SUSPENDED PROTECTIVE SHEETS

Byron K. Custer, Jr., and Ruth M. Custer, both of 725 Parkview Dr., Johnstown, Pa. 15905

Filed Jan. 25, 1979, Ser. No. 6,465

Int. Cl.[2] A47G *23/00*

U.S. Cl. 5—494 **20 Claims**

1. A restraining device which comprises

a. a fabric band

b. means for anchoring said fabric band to a bed

c. a top sheet for laying over said fabric band

d. mating ends on said top sheet and fabric band

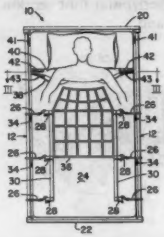
e. releasable fastener means on said ends that when fastened will define an opening for closely and completely encircling a person's torso beneath the underarms

f. means for suspending a portion of said top sheet a spaced distance above said fabric band

g. a section of said top sheet that extends away from said mating ends

h. means in said section for preventing a person's hand from grasping anything between said top and bottom sheets which comprises

i. another sheet mating with said section to form



j. a pocket and

k. a semi-rigid material insertable into said pocket.

4,214,329

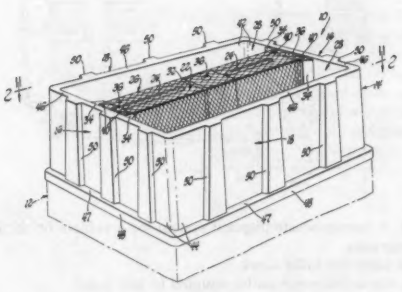
MOLDED PLASTIC BEE FEEDER

Stanley R. Kozlowicz, 4476 Tulane, Dearborn Heights, Mich. 48125

Filed Apr. 5, 1979, Ser. No. 27,222

Int. Cl.[3] A01K *53/00*

U.S. Cl. 6—5 **15 Claims**

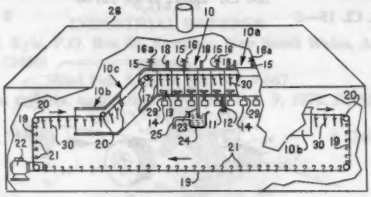


1. A bee feeder comprising a molded plastic receptacle adapted to be mounted on top of a hive body, the receptacle including side walls cooperatively defining a rectangular shape and a bottom wall that extends between the side walls to define an upwardly opening configuration for receiving liquid feed, a hollow projection that extends upwardly from the bottom wall within the interior of the receptacle such that bees can pass upwardly and downwardly through the bottom wall through the projection, the projection defining an upper opening through which bees pass between the feeder and the hive body, said opening having at least a portion thereof located inwardly from each of the side walls, and a grid that covers the projection opening in a spaced relationship thereto extending downwardly to the bottom wall in a spaced relationship to the projection so as to provide bees access to the feed.

4,214,330
METHOD FOR TREATMENT OF FIBERS WITH OZONE-STEAM MIXTURES

Walter J. Thorsen, El Cerrito, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 23, 1979, Ser. No. 15,503
Int. Cl.³ D06B *3/30*
U.S. Cl. 8—149.2 **4 Claims**



1. A method for treating fibers with an ozone-stream mixture, which comprises
(a) conveying the substance through an open-ended chamber having a horizontal middle section,
(b) centrally introducing the ozone-steam mixture in said horizontal middle section,
(c) exposing the fibers to the ozone-steam mixture in said horizontal middle section, and
(d) confining said ozone-steam mixture within said middle section by maintaining the bottom of said section about 15–45 centimeters above the top of the open chamber end.

4,214,331
METHOD FOR PROCESSING SOCKS

Baxter P. Freeze, Randleman, N.C., assignor to Commonwealth Hosiery Mills, Inc., Randleman, N.C.

Filed Jun. 1, 1979, Ser. No. 44,587
Int. Cl.³ D06B *5/24*
U.S. Cl. 8—150 **3 Claims**

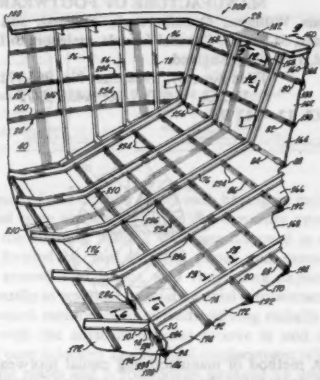
1. A method for processing anklet socks knit with at least some thermoplastic stretchable yarns and having cuff portions comprising the steps of; placing a plurality of anklet socks in a dye bath, subjecting the anklet socks to said dye bath for a predetermined time interval, extracting excess fluid from said socks leaving said socks damp to the touch, placing a first sock on a sock form while damp, placing a second sock over said first sock while damp to envelope said first sock to form a pair of socks on said form, removing said pair of socks from said form, and heating said pair of socks to dry them whereby wrinkles are removed and the paired socks have substantial bulk and stretch.

4,214,332
METHOD OF CONSTRUCTING WELDED METAL SKIN BOAT HULLS AND HULLS MADE THEREBY

Eugene M. Stoner, Stuart, Fla., assignor to ARES, Inc., Port Clinton, Ohio

Filed Apr. 24, 1978, Ser. No. 899,370
Int. Cl.² B63B *3/00*
U.S. Cl. 9—6 M **22 Claims**

1. A method of constructing a welded metal skin boat hull of specified configuration, which comprises the steps of:
(a) interconnecting a plurality of transverse hull frames with hull members to fix the frames in a longitudinally spaced apart relationship defining approximately a specified hull configuration;
(b) connecting a plurality of elongated continuous stringers in longitudinal extending and spaced apart relationship to the transverse frames so as to form a hull framework;
(c) positioning elongated metal hull skin panels longitudinally on the framework, with each of the panels being shaped to span and overlap a selected pair of the longitudinal stringers;

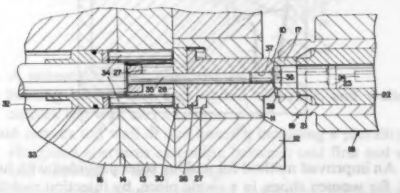


(d) positioning a plurality of elongated skin panel bridging fairings to overlap marginal edges of adjacent skin panels over at least substantial lengths thereof, and adjustably attaching the fairings to corresponding ones of the longitudinal stringers so as to clamp the skin panels to the longitudinal stringers;
(e) realigning the hull to the specified hull configuration by unclamping, adjusting and reclamping the skin panels as necessary; and
(f) permanently welding the fairings to the skin panels along external longitudinal intersections therebetween to form watertight weld seams.

4,214,333
APPARATUS FOR TRIMMING BOLTHEADS OR THE LIKE

Nelson I. Kin, Tiffin, Ohio, assignor to The National Machinery Company, Tiffin, Ohio

Filed Nov. 9, 1978, Ser. No. 959,080
Int. Cl.² B21K *1/50*
U.S. Cl. 10—20 **23 Claims**



1. A machine for producing bolts or the like comprising a frame, a slide on said frame reciprocable along a line of movement between a forward position and a rearward position, a tool on said frame, a trim die on said slide, said tool operating to support a bolt blank having a nonpolygonal head for trimming of said head by said trim die as said slide moves to said forward position, said trim die providing a polygonal shaped opening and polygonal cutting edges at the forward end of said

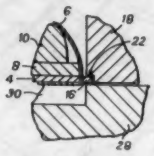
opening facing said tool, said cutting edges engaging said nonpolygonal head as said slide moves to said forward position and cooperating with said tool to shear away material of said nonpolygonal head to produce a polygonal head on said blank, said tool and die providing opposed stop surfaces which engage when said machine is operating without blanks, engagement of said opposed stop surfaces preventing contact between said cutting edges and said tool.

4,214,334

MANUFACTURE OF FOOTWEAR

William Williams, Queniborough, England, and Michael L. Crane, St Savior, Channel Islands, assignors to Delplast Limited, Leicester, England

Filed Nov. 27, 1978, Ser. No. 963,771
Int. Cl.³ A43D 9/00; A43B 3/12
U.S. Cl. 12—142 RS **10 Claims**



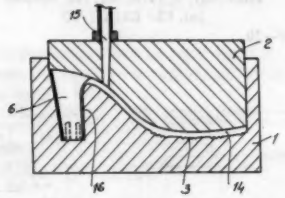
1. A method of manufacturing casual footwear as defined herein, comprising the steps of procuring an upper constituted by at least one strap or band and an insole, assembling the upper and the insole by passing end portions of the strap(s) through apertures provided in marginal portions of the insole and securing the strap end portions to an under surface of the insole, inserting a positioning support within the upper/insole assembly, positioning the assembly in a mould closing member of a moulding apparatus, providing mouldable plastics material to a mould cavity of a second member of the moulding apparatus and closing said mould cavity by means of said mould closing member so as to trap marginal edge portions of the insole against the two mould members.

4,214,335

METHOD FOR MAKING SOLES

Edoardo Ughi, Via Plinio, 4, Lecco, Italy

Filed Feb. 5, 1979, Ser. No. 9,524
Claims priority, application Italy, Apr. 28, 1978, 22856 A/78
Int. Cl.² A43D 25/00; A43B 13/28
U.S. Cl. 12—146 BR **6 Claims**



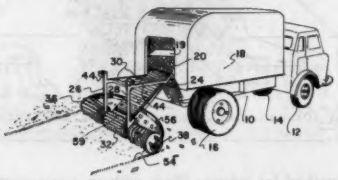
1. An improved method for making soles provided with high heel, for women shoes, in a single piece, by injection molding thermoplastics materials in a mould formed by several complementary portions defining therebetween the cavity of the sole heel, wherein in the heel cavity, before the injection, are inserted a sheet material for laterally and rearwardly covering the heel and a stiffening core or rigid structure, characterized in that said rigid structure is provided with a downwardly vertical direction concavely curved front wall and, at the front face thereof, with two continous side fins projecting for a length equal to the covering sheet material thickness and, at the base thereof, with slots and at least two blind holes effective to fix the heel top-piece.

4,214,336

TRASH PICKING DEVICE

Lloyd D. Peterson, 11546 Zea St., NW., Coon Rapids, Minn. 55433

Filed Jan. 2, 1979, Ser. No. 479
Int. Cl.² E01H 1/00, 12/00
U.S. Cl. 15—3 **8 Claims**



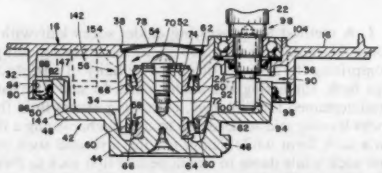
1. In a self propelled trash pick up vehicle having a trash receiving area provided with an entrance, an attachable collecting device comprising a support structure, an upper end section of which is adapted to be secured to said entrance; a central spiked roller rotatably mounted at a lower end section of said support structure; an endless belt movable between said lower end and said upper end sections that is drivingly connected to said central roller for conveying litter picked up by projecting spaced spikes of said roller into said receiving area, together with stripper means associated with the lower end section of the support structure for removal of said litter from said spikes and onto said belt, with the spikes of said roller resting on a ground surface, when the collecting device is attached to the vehicle, so as to support the roller, in the position of use.

4,214,337

FLOOR POLISHER

Wilfred C. Nise, Spring Lake, Mich., and Bertel S. Nelson, Naperville, Ill., assignors to Clarke-Gravely Corporation, Muskegon, Mich.

Filed May 16, 1979, Ser. No. 39,313
Int. Cl.² A47L 11/162
U.S. Cl. 15—49 R **27 Claims**



1. A drive for a compact rotary floor maintenance device, comprising:

a motor support base having a depending, annular skirt and a depending hub concentric with said skirt, said base having a motor shaft aperture therein;

a carrier having a generally vertical annular flange and a centrally disposed spindle, said spindle extending into said hub;

means within said hub for supporting said spindle for rotary motion, said carrier and said skirt defining a drive housing within which a liquid lubricant may be disposed;

a ring gear on said annular flange and engageable by a pinion gear secured to a motor shaft extending through the motor shaft aperture;

seal means carried by one of said annular skirt and said

flange for sealing the space between said flange and said skirt to prevent leakage of lubricant therethrough; and

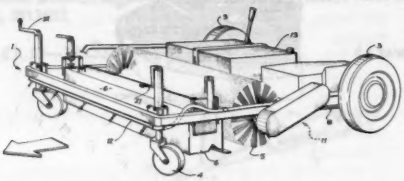
breather means carried by said base and extending into said drive housing for communicating said housing with atmosphere, preventing a build up of pressure within the housing during drive operation and for permitting said housing to be stored in any position without leakage of lubricant from said drive housing.

4,214,338

INDUSTRIAL SWEEPER

Allan H. Kyle, P.O. Box 88, Kempsey, New South Wales, Australia (2440)

Filed Feb. 5, 1979, Ser. No. 9,667
Claims priority, application Australia, Feb. 9, 1978, PD3318
Int. Cl.[2] A47L *11/292*
U.S. Cl. 15—83 **9 Claims**



1. Sweeping apparatus comprising:

a framework having forward and rearward ends;

an axle assembly bearing a pair of ground engaging rear wheels and mounted transversely in the vicinity of the rearward end of said framework;

a pair of independently suspended ground engaging front wheels mounted substantially toward the forward end of said framework;

a cylindrical sweeping brush comprising an elongate shaft with bristles extending radially therefrom and along the length thereof rotatably mounted transversely within said framework;

an elongate refuse catcher substantially equal in length to said sweeping brush and mounted near and substantially parallel thereto within said framework;

drive means connecting said axle assembly and said sweeping brush to cause the latter to rotate about its cylindrical axis in response to the rotation of said rear wheels;

an elongate, perforated sprinkler pipe extending across the forward end of said framework forwardly of and substantially parallel to said sweeping brush;

a water tank and a water pump both mounted within said framework;

water lines connecting an outlet of said water tank to an inlet of said water pump and an outlet of said water pump to said sprinkler pipe; and

drive means connecting said axle assembly and said water pump to cause the latter to pump water from said water tank to said sprinkler pipe whereupon water is sprayed through the perforations in said sprinkler pipe in response to the rotation of said rear wheels.

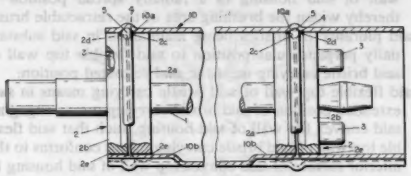
4,214,339

ROTARY BROOM CORE ASSEMBLAGE

Arthur E. Drumm, Marysville, Ohio, assignor to Marysville Rotary Broom Service, Inc., Marysville, Ohio

Filed Apr. 23, 1979, Ser. No. 32,171
Int. Cl.[2] A46B *13/02*
U.S. Cl. 15—179 **4 Claims**

3. A rotary broom assemblage comprising a generally cylindrical core upon the exterior of which a plurality of brush elements are secured in radially projecting relationship, said core having a pair of outwardly directed, annular depressions in its wall portion respectively adjacent to each end of the core, a drive shaft adapted to be co-axially inserted within said core, a pair of circular plates secured to said drive shaft for revolution therewith, said plates being axially spaced relative to each other so that the periphery of each said plate lies immediately adjacent one of said annular depressions in the core, a second pair of circular plates mounted on said shaft for axial movements relative thereto and being respectively disposed adjacent said first pair of circular plates, fastening means for respectively moving the second pair of plates towards abutting engagement respectively with said first pair of plates, the



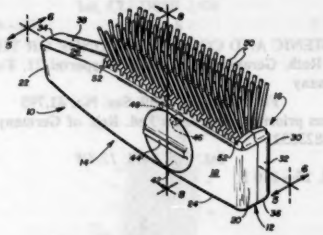
abutting surfaces of said circular plates each having an inclined circumferential edge surface to define an outwardly opening groove with the abutting plate, a split ring disposed in each said groove formed by said abutting plates and extending substantially around said plates, said ring being expansible radially outwardly in response to relative axial displacement of said plates toward each other to expand said ring radially into engagement with the adjacent annular groove in said core, whereby said core is locked against axial displacement relative to said circular plates and is frictionally engaged by said expanded ring to rotate with said drive shaft.

4,214,340

RETRACTABLE BRUSH WITH ROTATABLE ACTUATING MECHANISM

Fred A. Youngberg, Irving, and Clarence D. Zierhut, Richardson, both of Tex., assignors to John Lewis, Arlington, Tex., a part interest

Filed Feb. 8, 1979, Ser. No. 10,430
Int. Cl.[2] A46B *9/08*
U.S. Cl. 15—184 **5 Claims**



1. A retractable brush comprising:

a housing having first and second sidewalls, end walls, a convex top wall and a bottom wall;

said convex top wall of said housing including a plurality of elongated apertures extending between said first and second sidewalls of said housing;

bristle carrying means having first and second sidewalls and a flexible top wall;

a plurality of bristles mounted to said flexible top wall of said bristle carrying means and being disposed substantially perpendicular to said flexible top wall of said bristle carrying means;

said bristle carrying means being disposed within said housing, such that said first sidewall of said bristle carrying means lies adjacent said first sidewall of said housing and

said second sidewall of said bristle carrying means lies adjacent said second sidewall of said housing and further being positioned within said housing for slidable movement therein, such that said bristle carrying means is movable between a retracted position wherein said bristle carrying means and said plurality of bristles are contained within said housing and an extended position wherein said bristle carrying means is contained within said housing and said plurality of said bristles extend through said plurality of elongated apertures beyond said convex top wall of said housing in a radially spread position to thereby widen the brushing area of the retractable brush;

said plurality of bristles being maintained in said substantially perpendicular position to said flexible top wall of said bristle carrying means in said retracted position;

said flexible top wall of said bristle carrying means in said extended position of said bristle carrying means engaging said convex top wall of said housing, such that said flexible top wall of said bristle carrying means conforms to the interior surface of said convex top wall of said housing to thereby force said plurality of bristles to radially spread within said plurality of elongated apertures to extend ones of said plurality of bristles beyond said first and second sidewalls of said housing in said extended position of said bristle carrying means;

said first sidewall of said bristle carrying means including an elongated slot;

said first sidewall of said housing including knob means rotatably mounted within said first sidewall of said housing;

said knob means including pin means extending inwardly into said housing for engaging said elongated slot in said first sidewall of said bristle carrying means, such that upon rotation of said knob means, said bristle carrying means and said plurality of bristles move between said retracted position and said extended position to retract and extend said plurality of bristles from said housing;

said second sidewall of said housing disposed adjacent said second sidewall of said bristle carrying means including rib means; and

said second sidewall of said bristle carrying means including a groove positioned for engaging said rib means of said second sidewall of said housing for guiding said bristle carrying means between said retracted position and said extended position.

4,214,341

HYGIENIC AND COSMETIC SPONGE OR THE LIKE

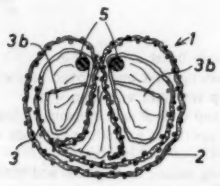
Ewald Rath, Geranienstr. 5, 5600 Wuppertal 21, Fed. Rep. of Germany

Filed May 23, 1979, Ser. No. 41,795

Claims priority, application Fed. Rep. of Germany, May 29, 1978, 2823332

Int. Cl.³ A47L 17/08

U.S. Cl. 15—210 R **4 Claims**



1. A surgical sponge comprising a bulbous jacket of gauze material having a edge portion gathered together to form a constricted tubular neck at a proximal end of the jacket, said neck being turned radially inwardly of the jacket and forming a filling core of the sponge, a rubber ring disposed interiorly of the jacket and contracted onto the inturned neck thereof retaining it in the constricted inturned position, wherein the gauze material consists of two or more gauze layers forming the jacket and each of the one or the several inside lying gauze layers having at least two opposite terminal sections are gathered together with the outside lying gauze layer to form the inwardly turned neck and the filling core of the sponge.

4,214,342

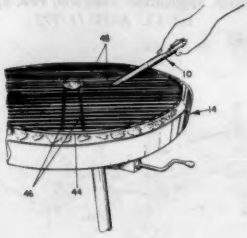
GRILL CLEANING TOOL

Paul D. Amundsen, 704 S.W. 119th, Seattle, Wash. 98146

Filed Jun. 22, 1978, Ser. No. 917,870

Int. Cl.³ A47L 17/00

U.S. Cl. 15—236 R **6 Claims**



1. A grill cleaning tool for removing deposits from the surface of grill rods comprising:

(a) a body which forms a handle for the tool having a first end; and

(b) a straight projection of rigid material extending from the first end of the handle, the projection having a wall having a curved transverse cross-section and an end portion opposite the handle, defining a closed end groove for closely receiving a grill rod, and wherein the projection is beveled so that the wall has opposite edges which extend angularly from the end of the projection on either side of the groove beyond the closed end of the groove toward the handle to permit the tool to engage the grill rod at a low relative angle.

4,214,343

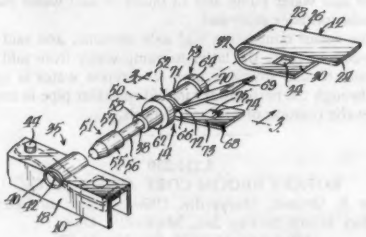
ARM ADAPTOR FOR HOOK-TYPE BLADE

Dennis A. Dudek, Dyer, Ind., assignor to The Anderson Company of Indiana, Gary, Ind.

Filed Feb. 22, 1979, Ser. No. 14,072

Int. Cl.² A47L 1/00; B60S 1/02

U.S. Cl. 15—250.32 **6 Claims**



1. An adaptor for connecting a windshield wiper arm to a windshield wiper blade wherein the wiper arm has an end that is hook-shaped with the hook being formed by an end portion of the arm being bent back to lie parallel to said arm, said adaptor comprising a double-ended pin, a U-shaped member having a center portion and a pair of legs, said center portion

of the "U" being secured onto one end portion of said pin, said legs having outer end portions spaced apart a greater distance than said end portion of the hook is spaced from said arm, a lug on at least one leg of said U-shaped member being adapted to seat in a recess in one portion of the hook end of the arm, the other end portion of said double-ended pin having a recess around the outer periphery thereof whereby said other end portion of the pin may be inserted in aligned openings in a blade and a spring on the blade seats in said recess to retain the pin from the adaptor and the arm assembled with the blade.

4,214,344

WINDSHIELD WIPER

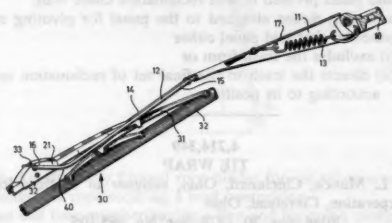
Alfred Kohler, and Hans Prohaska, both of Bietigheim-Bissingen, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Mar. 20, 1979, Ser. No. 22,198

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1978, 2812412

Int. Cl.² B60S *1/40*

U.S. Cl. 15—250.32 **4 Claims**



1. A windshield wiper assembly comprising:
a supporting yoke having a recess;
a wiper blade coupled to said supporting yoke and including a wiping element;
a wiper arm comprising a wire yoke including two parallel legs; and
a web connecting said legs, said recess being adapted to pivotally retain said web.

4,214,345

MACHINE FOR SEVERING POULTRY INTO PREDETERMINED PORTIONS

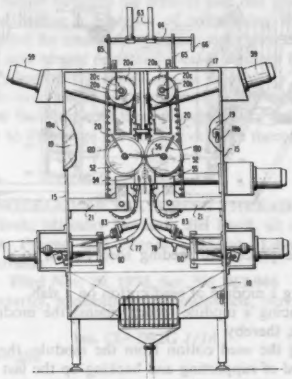
William D. Duncan, and Carolyn L. Duncan, both of Kokomo, Ind., assignors to Duncan Creations, Inc., Kokomo, Ind.

Continuation of Ser. No. 725,559, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 583,875, Jun. 5, 1975, abandoned, which is a continuation-in-part of Ser. No. 436,361, Jan. 24, 1974, Pat. No. 3,950,820. This application Aug. 23, 1978, Ser. No. 936,046

Int. Cl.² A22C *21/00*

U.S. Cl. 17—11 **7 Claims**

1. In a machine of the type wherein a succession of eviscerated poultry carcasses are introduced at the input end of a conveyor means which carries the carcasses away from the input in a predetermined path into engagement with a plurality of circular knives spaced in succession along said path which automatically successively sever at least the breast meat, thighs and wings from each of said carcasses and split the carcasses into two portions, each of said circular knives being subjected to a stream of water, the improvement which comprises:
means for rotating each of said knives at a speed in excess of 2000 rpm;
nozzle means for each of said circular knives comprising at least two orifices each positioned respectively facing the opposite sides of the knives to direct jets of water against the opposite surfaces thereof over areas extending to points at least three-fourths of the distance inwardly from the peripheries of the knives;
conduit means for supplying water under pressure to each of said nozzle means;
enclosure means surrounding said conveyor means and circular knives for confining water thrown off by centrifugal force from said knives, and drain means for discharging excess water thrown off;



said enclosure means being provided with an opening for carcasses to be successively introduced to the conveyor means input, and having at least one other opening to permit removal of split carcasses and products severed from the carcasses;
said conveyor means including collector means to direct said split carcasses and products severed from the carcasses to said other opening to minimize contact with said water.

4,214,346

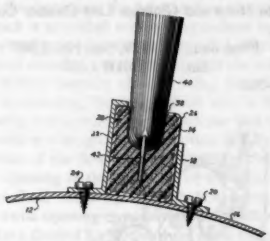
BRUSH STICK

George K. McDonald, P.O. Drawer E, Lamesa, Tex. 79331, assignor to George K. McDonald, Lamesa, Tex.

Filed Dec. 26, 1978, Ser. No. 972,672

Int. Cl.² D01B *1/06*

U.S. Cl. 19—60 **5 Claims**



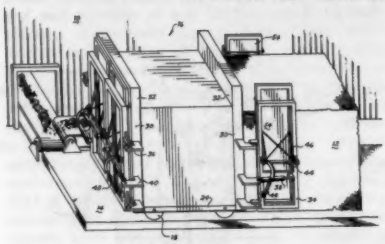
1. In cotton processing equipment having
a. a first cylinder with cotton on the surface thereof, and
b. a doffing cylinder adjacent the first cylinder; an improved elongated brush on the doffing cylinder comprising:
c. a stick made of expanded rigid thermoplastic having closed cells on the interior and a dense non-cellular skin,
d. the stick having a rectangular cross section of a width and height, and
e. a length several times the height, and
f. a series of holes in the width side along the length, and
g. natural bristles in the holes.

4,214,347

METHOD AND APPARATUS OF FEEDING COTTON TO A GIN

Jimmy F. Prather, P.O. Box 629, Brownfield, Tex. 79316

Filed Apr. 25, 1979, Ser. No. 33,112
Int. Cl.[2] D01G 7/00
U.S. Cl. 19—64.5 **10 Claims**



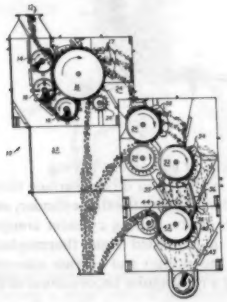
1. In the process of feeding seed cotton to a cotton gin including:
   a. placing a module of seed cotton on a slab,
   b. advancing a module feeder against the module of seed cotton, thereby
   c. taking the seed cotton from the module; the improved method of supporting and backing up the last portion or remnant of the module as it is being fed into the feeder comprising the following steps:
   d. swinging a door about a vertical axis on a door jamb on either side of the module feeder from a wing open position on the module feeder into a closed end position upon the module feeder as soon as the doors may be swung about the end of the module, then after the doors are closed
   e. pushing the bottom of the door against the module while holding the top of the door in the same position relative to the feeder, and
   f. continuing to push the bottom door inward until the door is adjacent to feeder means within the feeder and has about the same angle as the feeder means from top to bottom.

4,214,348

TRASH BY-PASS FOR BURR AND STICK MACHINE

Robert C. Schwartz, and John E. Sparks, both of Lubbock, Tex., assignors to Horn and Gladden Lint Cleaner Co., Inc., Lubbock, Tex.

Filed Jan. 11, 1979, Ser. No. 2,587
Int. Cl.[2] D01B 1/00
U.S. Cl. 19—203 **4 Claims**



1. In a cotton gin burr and stick machine having:
   a. a cotton inlet,
   b. a directing conveyor,
   c. a first set of rotating saws,
   d. a plurality of beater arms in proximity to said first set of rotating saws,
   e. doffing brushes adjacent to the first set of rotating saws,
   f. a clean cotton chute,
   g. a reclamation chute,
   h. a first set of reclamation saws in the reclamation chute,
   j. a second set of reclamation saws in the reclamation chute,
   k. doffing brushes adjacent to both the first and second set of reclamation saws,
   m. beater bars in proximity to the first set of reclamation saws,
   n. beater bars in proximity to the second set of reclamation saws,
   o. a final set of reclamation saws,
   p. beater bars in proximity to said final set of reclamation saws,
   q. a set of doffing brushes adjacent to the final set of reclamation saws; the improved structure for the machine comprising:
   r. a trash by-pass panel between the second and final set of reclamation saws,
   s. said panel pivoted to said reclamation chute wall,
   t. adjusting means attached to the panel for pivoting said panel, so that said panel either
      (i) excludes the trash from or
      (ii) directs the trash to the final set of reclamation saws according to its position.

4,214,349

TIE WRAP

Emil L. Munch, Cincinnati, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Nov. 30, 1978, Ser. No. 965,106
Int. Cl.[2] B65D 63/00
U.S. Cl. 24—16 PB **6 Claims**

1. A tie comprising: a head having an elongated flexible strap integrally formed therewith, a passage through said head extending substantially perpendicular to said strap for longitudinally receiving said strap, said passage having an entrance end and an exit end, said strap having a plurality of longitudinally-spaced teeth thereon and terminating at a free end, said teeth having shoulders facing toward said head and having teeth cam surfaces facing toward said free end, said shoulders and cam surfaces on each tooth meeting at intersections, at least one pawl in said passage for cooperating with said teeth, said pawl extending in a direction from said entrance end of said passage toward said exit end thereof, said pawl having a pawl cam surface facing toward said entrance end of said passage and a pawl terminal end facing toward said exit end of said passage, said pawl projecting generally radially into said passage to restrict the opening therethrough to a size less than the size of said strap across said intersections, said pawl being movable generally radially outwardly for movement of said teeth intersections therepast when said strap is extended through said passage, said strap being insertable through said entrance end of said passage by cooperation between said teeth cam surfaces and said pawl cam surface to cam said pawl generally radially outwardly for movement of said teeth shoulders past said pawl terminal end for providing cooperation between said shoulders and said pawl terminal end to prevent reverse movement of said strap out of said passage, said pawl terminal end being spaced a substantial distance from said passage exit end such that said pawl is not accessible through

said exit end for releasing same from engagement with said shoulders, said teeth cam surfaces being shaped for normally cooperating with said pawl terminal end to bias same outwardly and provide insertion of said strap through said passage in a direction from said exit end toward said entrance end, and abutment means on said strap adjacent said free end thereof for engaging said pawl terminal end to prevent insertion of said strap through said exit end of said passage, said abutment means being freely movable past said pawl when said strap is inserted into said passage through said entrance end thereof.

4,214,350

ROPE BINDER

William L. Copelan, 31843 Tennessee, Yucaipa, Calif. 92399

Filed Feb. 5, 1979, Ser. No. 9,749
Int. Cl.² F16G *11/10*
U.S. Cl. 24—129 R **1 Claim**

1. An integrally formed rope binder for use when applying tension to a rope securing a load comprising:

an end base member having a first end leg and a central leg whose axes extend generally transverse to the axis of the end base member for enabling a rope having a thickness less than the distance between said legs to move at any point between said legs with relative ease; and

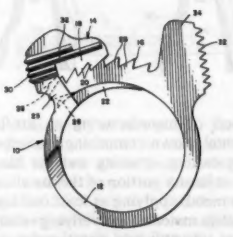
a generally U-shaped arm defined by a pair of end posts inter-connected by a side post, one of said end posts being integrally connected to one end of said end base and a free end of said other end post being spaced from said central leg for enabling a rope to pass intermediate said end post free end and said central leg, the axis of said end base and the axis of said integrally connected end post intersecting to define an obtuse angle, and whereby said binder is easily removable from said rope.

4,214,351

SNAP-ON CLAMP

Raymond C. Wenk, 340 N. Walkup, Crystal Lake, Ill. 60014

Filed Aug. 15, 1978, Ser. No. 933,942
Int. Cl.² A44B *21/00*
U.S. Cl. 24—255 SL **42 Claims**



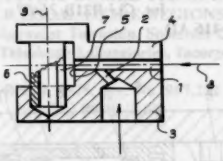
1. A clamp comprising an open-ended substantially annular band having a pair of opposed, interlockable members disposed at the open ends thereof, one of said interlockable members including a generally arcuate jaw defined by an outer cantilevered toothed arm extending in a direction circumferentially of the band and having a plurality of teeth along the inside thereof and an inner arm spaced radially inwardly of said outer arm defining a mouth between said arms, said outer arm of said one interlockable member being radially movable independently of said inner arm and the sides of said outer arm being exposed for grasping to effect said movement, and the other of said interlockable members comprising a toothed tongue positionable within said mouth between the arms of said one interlockable member and having a plurality of teeth along the outside thereof oriented for interlocking engagement with the teeth of the toothed arm of said one interlockable member for closing the clamp, whereby the clamp can be opened by lifting the outer cantilevered arm of said one interlockable member independently of the inner arm thereof and radially outwardly of said tongue to disengage the respective teeth thereof.

4,214,352

NOZZLE FOR TEXTURING THREAD

Miloslav Pávek; Miroslav Novácek; Jiří Fantl, all of Liberec; Jan Kára, Prague, and Zdenek Kašpárek, Liberec, all of Czechoslovakia

Filed Nov. 20, 1978, Ser. No. 962,046
Claims priority, application Czechoslovakia, Nov. 22, 1977, 7680/77
Int. Cl.² D02G *1/16*
U.S. Cl. 28—254 **1 Claim**



1. Nozzle for texturing thread by a gaseous fluid stream, comprising a first duct for guiding the thread and a second duct for feeding the gaseous fluid, the second duct opening into the first duct and being disposed at a substantial angle with respect thereto, the first duct having an angular cross section, a texturing bridge disposed at the exit of the first duct formed by a hollow tube having an axis skewed relative to the longitudinal axis of the first duct, the tube having an open end and a side wall which is provided with a longitudinal wedge-shaped opening, disposed opposite the exit opening of the first duct, the longitudinal opening extending through the sidewall of the tube to the hollow interior thereof being directed angularly toward and intersecting the longitudinal axis of the first duct, the thread being pre-textured as it enters the first duct through which it travels in a longitudinal direction in a first plane past the intersection of the first and second ducts, thence entering through the opening in the side wall of the tube wherein it is subjected to final texturing and thence being withdrawn through the same opening in a second plane different from the first entry plane thereof for withdrawal from the interior of the hollow tube through the open end.

4,214,353

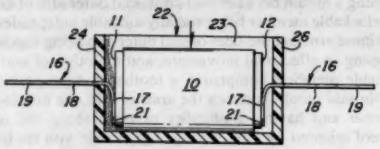
METHOD OF ASSEMBLING HEATED TERMINALS AND ROLLED FILM CAPACITORS WITHIN PLASTIC BOXES

Robert F. Kalina, Lombard, Ill., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 28, 1978, Ser. No. 974,152
Int. Cl.² H01G *4/32*
U.S. Cl. 29—25.42 **8 Claims**

1. A method of assembling leads to a boxed electrical component, which comprises:

heating a pair of terminals;
moving the heated terminals through and into a thermoplastic box; and



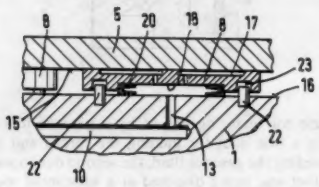
inserting the component into the box to deflect the terminals into engagement with sections of the component.

4,214,354

CONTROLLED DEFLECTION ROLL

Rolf Lehmann, Rudolfstetten, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland

Filed Jun. 25, 1979, Ser. No. 51,635
Claims priority, application Switzerland, Jul. 11, 1978, 7514/78
Int. Cl.[2] B21B *21/02*
U.S. Cl. 29—116 AD **8 Claims**



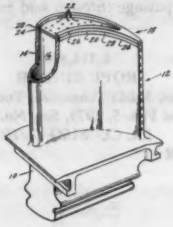
1. A controlled deflection roll comprising:
a stationary roll support;
a substantially tubular-shaped roll shell;
means for mounting said substantially tubular-shaped roll shell to be rotatable about said stationary roll support;
at least one hydrostatic pressure element arranged between said roll support and said roll shell;
said hydrostatic pressure element being guided at said roll support and having a contact surface against which slidingly bears an inner surface of said roll shell;
a hydraulic pressure chamber arranged between the roll support and said pressure element for the infeed of a hydraulic pressurized fluid medium; said contact surface of said pressure element being provided with a number of hydrostatic bearing pockets;
throttle channel means for connecting said hydrostatic bearing pockets with said pressure chamber;
said pressure element constituting a substantially plate-like pressure element arranged in an intermediate space between the inner surface of said roll shell and an outer surface of said roll support;
seal means retained at the pressure element; and
said pressure chamber being bounded by the outer surface of said roll support, a surface of the pressure element confronting the outer surface of said roll support and said seal means retained at the pressure element.

4,214,355

METHOD FOR REPAIRING A TURBOMACHINERY BLADE TIP

John W. Zelahy, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 21, 1977, Ser. No. 862,781
Int. Cl.[2] B23P *15/04, 7/00*
U.S. Cl. 29—156.8 B **3 Claims**



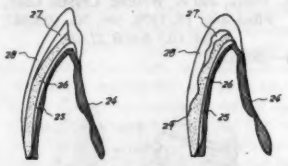
1. In a method for repairing a turbomachinery blade which includes an airfoil-shaped hollow body having sidewalls defining one portion of an internal cavity and an airfoil-shaped tip cap defining the radially outer boundary of said internal cavity, the steps of:
removing the tip cap from the blade body;
providing an airfoil-shaped closure plate of a first alloy selected from the group consisting of nickel-base and cobalt-base superalloys, and characterized by high mechanical strength properties at elevated temperatures;
diffusion bonding the closure plate to the sidewalls;
providing a rib member substantially of the airfoil shape of the closure plate and of a second alloy of composition different from that of the first alloy and characterized by resistance to oxidation, sulfidation and thermal fatigue at elevated temperatures; and then,
diffusion bonding the rib member to the periphery of the closure plate.

4,214,356

ARTIFICIAL PORCELAIN TOOTH MANUFACTURING

Susumu Takenaka, Osaka; Hideo Ishii, Toyonaka, and Masao Katooka, Ikeda, all of Japan, assignors to Sansha Electric Manufacturing Co., Ltd., Osaka, Japan

Filed Feb. 2, 1978, Ser. No. 874,498
Claims priority, application Japan, Feb. 7, 1977, 52-12769
Int. Cl.[2] B21F *43/00*
U.S. Cl. 29—160.6 **2 Claims**

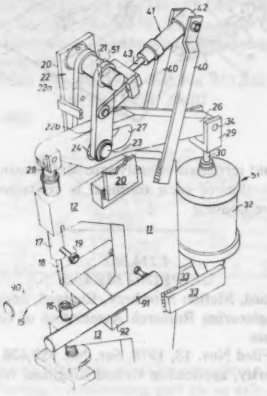


1. The method of manufacturing an artificial porcelain coated metal dental crown comprising the steps of forming a metal crown by casting, drawing and the like, applying an opaque layer to at least a portion of the metal crown to shield the color of the metal, applying at least one layer of a slurry containing porcelain materials in overlying relationship to coat said opaque layer, vibrating said metal crown with said layers thereon at an ultrasonic frequency to condense said porcelain materials and expel air and liquid therefrom and then firing the coated metal crown to form the completed dental crown.

4,214,357
PUNCHING DEVICE

Elsworth R. Delves, Lower Mackworth Village, England, assignor to Purpose Engineers Limited, Little Eaton, England

Filed Jan. 25, 1979, Ser. No. 6,501
Claims priority, application United Kingdom, Feb. 16, 1978, 06258/78
Int. Cl.[2] B23P *15/18*
U.S. Cl. 29—233 11 Claims

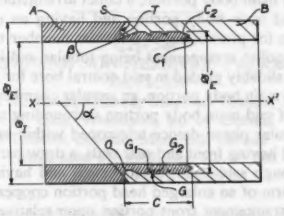


1. A punching device comprising a tool holder mounted for linear movement, a linkage attached to the tool holder, a first piston-cylinder unit connected to the linkage and actuable to effect initial predetermined free movement of the tool holder in the operating direction, and a second piston-cylinder unit connected to the linkage and actuable at the end of said predetermined free movement to effect further working movement of the tool holder in the working direction.

4,214,358
METHOD OF ASSEMBLY OF TWO METALLIC PARTS

Adrien Clerc, Sassenage, France, assignor to Commissariat a l'Energie Atomique, France

Filed Mar. 22, 1978, Ser. No. 888,914
Claims priority, application France, Mar. 25, 1977, 77 09046
Int. Cl.[2] B21D *39/00*; B23P *11/00*
U.S. Cl. 29—520 3 Claims

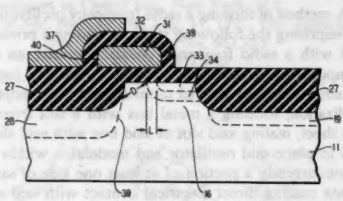


1. A method of assembly of two tubular parts, the first part being formed of a hard metal the second part being formed of a malleable metal, the two tubular parts having a common axis of assembly, said method comprising the steps of (1) machining the end portion of said first part to reduce the external diameter of the end portion of said first part over a given length, designated as the assembly length, said first part end portion being machined along the assembly length in such a manner that the assembly length is a surface of revolution about the axis of the said first part, said surface of revolution including a groove at the portion of the assembly length most remote from the end of the first tubular part which carries said surface of revolution, said groove having a first conical surface at an angle α to the axis of the said first tubular part, said groove having a second conical surface at an angle β to the axis of said first tubular part, the said first and second conical surfaces being joined at corresponding ends thereof by a curved, beaded segment, designated as a toric surface, the said first conical surface opening to the original external surface of the said first tubular part, the said second conical surface opening to said portion of reduced diameter of the first tubular part, said assembly length also having at least one reversed conical surface groove of revolution axially spaced from said first mentioned groove, said reversed conical surface groove having one surface perpendicular to the axis of the first tubular part and having its other surface in the form of a conical surface which is opposite in direction, with respect to the axis of the first tubular part, to the conical surfaces in the first mentioned groove and (2) forcing an end of the second tubular part against the first tubular part end having said reduced external diameter, in a coaxial direction, to thereby deform the second tubular part end into said first mentioned groove on the first tubular part, and to thereby deform a portion of the second tubular part into said conical surface groove of revolution, the said end of the second tubular part completely filling the volume of material removed by machining from the said end of the first tubular part, the external and internal diameters of the first and second tubular parts, after said forcing step, being the same.

4,214,359
MOS DEVICES HAVING BURIED TERMINAL ZONES UNDER LOCAL OXIDE REGIONS

Dawon Kahng, Bridgewater Township, Somerset County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 7, 1978, Ser. No. 967,222
Int. Cl.[2] B01J *17/00*
U.S. Cl. 29—571 7 Claims



1. A method of fabricating signal translating devices of the MOS type in a silicon semiconductor chip **10**, said chip having at least a portion adjoining one surface of one conductivity type, said method comprising:

(1) defining on the one surface of the chip at least one active device area,

(2) forming from a portion of the chip adjacent the one surface at least one mesa **16** including said active device area,

(3) making a first selective introduction of significant impurities of one conductivity type in portions of the chip other than the mesa,

(4) heating the chip to grow surface portions **27** of silicon dioxide adjoining the mesa and to diffuse the first introduced impurities further in said chip to form terminal zones **28**, **29**, **30** beneath the oxide portions and adjoining at least one side of the mesa,

(5) forming on a portion of the mesa **16** a gate electrode **31**, the gate electrode having one edge **38** located on top of the mesa **16** and the opposite edge over the oxide portion adjoining the one side of the mesa, the one edge **38** of the gate electrode **31** being located a predetermined lateral distance from the end **39** of the buried terminal zone **28**

under the oxide portion adjacent the one side of the mesa, said buried terminal zone constituting the drain zone,

(6) making a second selective introduction of significant impurities of both conductivity types into the mesa portion **16** not covered by the gate electrode **31**, and

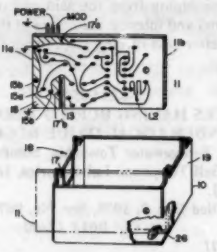
(7) heating the chip to diffuse the second introduced impurities to form a channel zone **34** and a source zone **33** and to adjust the dimensions therebetween and with the drain zone **28**.

4,214,360

METHOD OF MAKING A RADIO FREQUENCY OSCILLATOR-MODULATOR WITH GROUND METALLIZATION

Wade B. Tuma, Campbell, and Niles E. Strohl, Sunnyvale, both of Calif., assignors to Atari, Inc., Sunnyvale, Calif.

Division of Ser. No. 818,838, Jul. 25, 1977, Pat. No. 4,152,671.
This application Oct. 10, 1978, Ser. No. 949,848
Int. Cl.[2] H01R *43/00*
U.S. Cl. 29—829 **6 Claims**



1. A method of forming a radio frequency oscillator-modulator comprising the following steps: providing a printed circuit board with a radio frequency coaxial terminal, an oscillator and modulator, ground metallization effectively surrounding said radio frequency coaxial terminal, and a slot adjacent said metallization; forming a metal box with a slot from a single metal sheet; mating said slot of said box with said slot of said board to place said oscillator and modulator within said box and concurrently a portion of at least one side of said slot of said box making direct electrical contact with said metallization.

4,214,361

METHOD OF MAKING INSULATED ELECTRICAL TERMINATIONS

Daniel R. Coldren, Enola, and James E. Marley, Dauphin, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 863,567, Dec. 22, 1977, abandoned.
This application Mar. 8, 1979, Ser. No. 18,551
Int. Cl.[2] H01R *43/04*
U.S. Cl. 29—863 **4 Claims**

1. A method of producing insulated terminals on the ends of wires comprising the steps of:

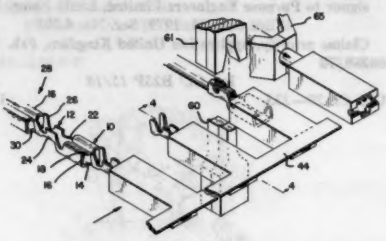
providing a continuous plastic strip of connector housings in side-by-side spaced-apart relationship,

feeding said strip past a terminal insertion station and partially inserting an electrical terminal into each housing so that the crimp portion of each terminal is outside of its associated housing,

winding said strip onto a reel,

feeding said strip from said reel to a terminal applicator,

crimping said terminals to wires as said strip is fed to said applicator, and



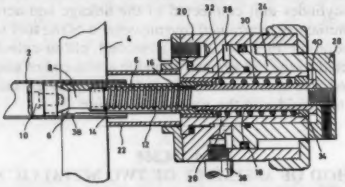
inserting said terminals entirely into said housing so that the crimp portion of each terminal is contained within its respective housing.

4,214,362

GRIPPING MEANS

James H. Beard, Melton Mowbray, England, assignor to Production Engineering Research Association of Great Britain, Great Britain

Filed Nov. 13, 1978, Ser. No. 959,428
Claims priority, application United Kingdom, Nov. 26, 1977, 49310/77
Int. Cl.[2] B23P *19/02*
U.S. Cl. 29—726 **10 Claims**



1. A gripping mechanism for removing tubular members extending through a support wall by drawing the tubular members through the support wall, said gripping mechanism comprising a main body portion, said main body portion having front and rear ends, a central bore extending entirely through said main body portion, a collet arrangement projecting from said main body portion and having an expandable front portion for positioning in a tubular member to be withdrawn, said collet arrangement being tubular and including a rear portion slidably guided in said central bore for movement through said main body portion, an annular chamber in at least a rear part of said main body portion surrounding said central bore, an annular piston device telescoped within said annular chamber and having front and rear ends, a draw bar extending entirely through said collet arrangement and having a front end in the form of an enlarged head portion cooperative with said collet arrangement front portion upon relative rearward movement of said draw bar, coupling means coupling a rear portion of said draw bar to said piston device for effecting rearward movement of said draw bar through said collet arrangement and said main body portion in response to rearward movement of said piston device, said main body portion having a tubular front end portion defining reaction means for reaction engagement with a support wall in telescoped relation to a tubular member to be drawn through said support wall, said piston device front end setting off a front part of said annular chamber, and means for introducing a fluid under pressure into said annular chamber front part for reacting on said piston device for effecting rearward movement of said piston device

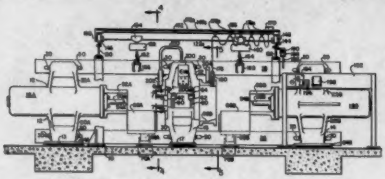
together with an initial rearward movement of said draw bar relative to said collet arrangement to extend said collet arrangement front portion into gripping engagement with a tubular body and subsequent rearward movement in unison of said draw bar and said collet arrangement.

4,214,363

METHOD AND APPARATUS FOR PRESSING WHEELS AND OTHER MEMBERS ONTO OR OFF OF AN AXLE

Jack A. Rickrode, and Charles W. Frame, both of Chambersburg, Pa., assignors to Chambersburg Engineering Company, Chambersburg, Pa.

Filed Dec. 19, 1978, Ser. No. 971,058
Int. Cl.[2] B23P *19/02*
U.S. Cl. 29—802 **23 Claims**



1. An improved hydraulic press for mounting a larger diameter member having a conforming part on an axle seat by press fit, or the like, or demounting such a member from an axle seat, said press having spaced apart and opposed hydraulic cylinders containing axially aligned rams, a supply of incompressible fluid and means to connect and feed fluid between said supply and the cylinders, control means to control flow of fluid to and from said cylinders in order to selectively drive each ram toward the other and to retract said rams, and tension tie means connecting the cylinders mechanically together in order to accept, distribute, and balance tension forces generated by action of at least one of the rams tending to drive the cylinders apart, the improvement comprising:

ram extensions on the rams,

control means for the rams to enable the ram extensions to engage the ends of an axle and clamp that axle between them, thereby providing full support for the axle, and

further control means to cause the rams when in axle clamp position to move in synchronism, whereby one of the rams is selected as a drive member to drive the axle and the other ram.

4,214,364

HERMETIC AND NON-HERMETIC PACKAGING OF DEVICES

Jacques R. St. Louis, Ottawa; Manfred Thumm, Nepean, and Geoffrey N. Gale, Woodlawn, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed May 21, 1979, Ser. No. 41,003
Int. Cl.[3] H01R *43/00*
U.S. Cl. 29—827 **11 Claims**

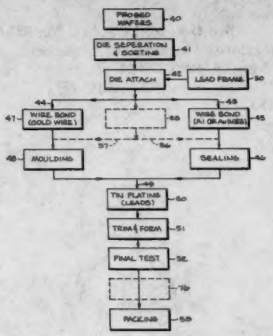
1. A method of hermetic and non-hermetic packaging of devices, comprising:

providing a plurality of lead frame strips, each strip including a plurality of lead frames, each lead frame including a die mounting position and a plurality of leads associated with each die mounting position;

feeding said strips sequentially to a die mounting apparatus and mounting a die at each said die mounting position;

feeding said strips to a wire bonding position and wire bonding said dies to said leads;

selectively feeding said strips alternatively to one of an hermetic sealing apparatus and a non-hermetic sealing apparatus, to form a plurality of packaged devices on each strip, a device at each frame;



trimming and forming said leads;

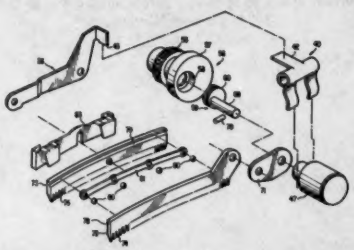
separating said packaged devices from said strips.

4,214,365

BLADE ASSEMBLY

Henry J. Walter, Wilton, Conn., and William Mack, Commack, N.Y., assignors to Clairol Inc., New York, N.Y.

Division of Ser. No. 823,796, Aug. 11, 1977. This application Oct. 16, 1978, Ser. No. 951,959
Int. Cl.[2] B26B *19/02*
U.S. Cl. 30—224 **6 Claims**



1. A blade assembly for shears including

a pair of blades each having

a spine and

a cutting edge thereon, said cutting edges being positioned adjacent each other in shearing relationship, at least one of said blades having a generally longitudinal recess in the spine thereof adjacent the other of said blades,

at least one of said blades having a groove therein in communication with said recess,

a plurality of balls spaced longitudinally from each other in rolling engagement with a wall of said groove and with the opposite spine portion of the opposite blade, and

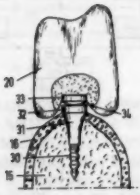
retaining means for maintaining said blades in shearing relationship.

4,214,366

DENTURE CONSTRUCTION

Ernst A. Laban, Burgemeester de Zeeuwstraat 36, Numansdorp, Netherlands

Filed Oct. 16, 1978, Ser. No. 951,649
Claims priority, application Netherlands, Oct. 20, 1977, 7711536; May 19, 1978, 7805476
Int. Cl.[3] A61C 13/22
U.S. Cl. 433—189 11 Claims



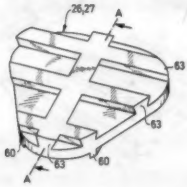
1. In a denture apparatus including an implant having a base portion for insertion in a patient's jaw and a head portion having a first surface for supporting a denture element, said apparatus further including a denture element having a second surface for directly engaging said first surface for mounting said denture element on said implant, the improvement wherein there are provided a magnetic element and a magnetically attractable element, one in each of said head portion and said denture element in the vicinity of said first and second surfaces, and wherein one of said surfaces is flat, and wherein the other of said surfaces is convex.

4,214,367

DENTAL ARTICULATOR

Heinz Mack, Heideckstr. 14, 8 Munich 19, Fed. Rep. of Germany, and Günter Singer, Munich, Fed. Rep. of Germany, assignors to Heinz Mack, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 666,395, Mar. 12, 1976, Pat. No. 4,058,895. This application Sep. 7, 1977, Ser. No. 831,116
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1975, 2511388; Nov. 15, 1975, 2551189
The portion of the term of this patent subsequent to Nov. 22, 1994, has been disclaimed.
Int. Cl.[2] A61C 11/00
U.S. Cl. 433—60 16 Claims



1. A mounting plate for use with a dental articulator including upper and lower frames, said mounting plate comprising a plate member including a plurality of raised webs formed in the surface thereof which, in use, constitutes the surface of the mounting plate which faces away from the corresponding frame and a plurality of raised support members formed in the opposite surface thereof which, in use, constitutes the surface of the mounting plate which faces toward the corresponding frame, said plate member further including a threaded bore and a pair of depressions formed in said lower surface, said depressions being located on opposite sides of said threaded bore in line therewith, said raised support webs being dovetailed in cross section.

4,214,368

DIPSTICK FOR LIQUID NITROGEN

John B. Peterson, Madison, Wis., assignor to W. R. Grace & Co., New York, N.Y.

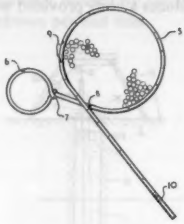
Filed Dec. 20, 1978, Ser. No. 971,642
Int. Cl.[2] G01F 23/04
U.S. Cl. 33—126.7 R 5 Claims

1. A dipstick for measuring the level of liquid nitrogen in a container, said dipstick consisting essentially of a high impact styrene plastic material, said plastic material being such that it is inert to liquid nitrogen and it will not shatter after going from the atmosphere to exposure to liquid nitrogen for a period of time sufficient to make a measurement of the height of said liquid nitrogen in said container, said pre-determined period of time being within the range of approximately 8 to approximately 10 seconds, said plastic material being black in color, said color being selected such that the frostline formed on said dipstick by the freezing moisture in the air on said dipstick after said dipstick is dipped into said container of liquid nitrogen will be readily visible on said dipstick, said dipstick plastic material having a predetermined flexibility whereby the dipstick is highly waveable in the air to permit rapid frostline formation after said immersion in said liquid nitrogen to perform said liquid nitrogen level measurement, and said dipstick plastic being flexible to permit improved flexibility for storage of said dipstick between such uses, said dipstick being of generally flat elongated configuration having an elongated axis and having a generally rectilinear cross-sectional shape, said cross-sectional shape having a relatively high width-to-thickness ratio with a width of about $\frac{1}{4}$ inch and a thickness of about 2 millimeters, with said width being measured as the long dimension of said cross-sectional shape and said thickness being measured as the short direction of said cross-sectional shape, said pre-determined width-to-thickness ratio being on the order of 6 to 1, whereby said improved flexibility for waveability in use and said improved storability between uses is enhanced, and an indicia printed in white on at least one side of said dipstick, said indicia being printed on at least one of the two surfaces of said dipstick defined by said larger width and the elongated axis of said dipstick, said indicia being oriented on said surface defined by said length and said thickness in such an orientation that the reading of said indicia corresponds to the height of the liquid nitrogen in said container, and so that upon removal of the dipstick from said liquid nitrogen and waving the dipstick in air, frost forms on the dipstick to cover those indicia values that were below the upper surface of the liquid nitrogen level whereby the indicia value at the upper surface of the frostline corresponds to the height of the liquid nitrogen in said container.

4,214,369
PASTA MEASURER

Ronald J. Wasik, and Janice E. Wasik, both of 1293 Limberlost Rd., London, Ontario, Canada (N6G 3M3)

Filed Nov. 13, 1978, Ser. No. 959,713
Int. Cl.[2] G01B *3/02*
U.S. Cl. 33—137 R 3 Claims

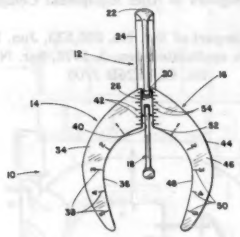


1. A measuring device for accurately measuring the amount of uncooked spaghetti or vermicelli required to produce a given volume of cooked pasta comprising:
a flexible calibrated measuring line,
a ring on one end thereof,
a reference point for said calibrations on said line spaced from said ring said reference point is an external projection against which the looped free end portion of the line has sliding engagement, and
means for relating the said calibrations to volume of cooked pasta wherein said means comprises a finger grip tab at the free end of said line, said tab containing indicia for relating said calibrations to said volume of cooked pasta.

4,214,370
HOOF ALIGNMENT TOOL

Bud A. Beaston, Rte. 1, Box 88, Sperry, Okla. 74073

Filed Aug. 7, 1978, Ser. No. 931,505
Int. Cl.[2] A01L *11/00*
U.S. Cl. 33—195 5 Claims

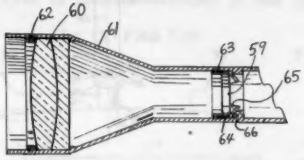


1. A hoof alignment device for measuring and determining the shape of a horse's hoof, the device comprising:
(a) a vertical hinge member;
(b) a pair of arm members each having one end hingedly attached to the hinge member and pivotal in a substantially horizontal plane, each arm member having an inwardly facing concave arcuate edge surface substantially conforming to the shape of a horse's hoof wall, each said arcuate edge surface terminating with a straight edge surface near the hinge member;
(c) a straightedge member having one end pivotally carried by the lower end of the hinge member and being pivotal in a substantially vertical plane, said straightedge member being pivotal adjacent the said arm member straight edge surfaces; and
(d) a first set of opposing measurement indicia provided along each arcuate edge surface, a second measurement indicia provided along the straightedge member, and a third set of opposing measurement indicia provided on the straight edge surface of the arm members adjacent the straightedge member to measure the angle of the straightedge member with respect to the horizontal plane.

4,214,371
DEVICE FOR ILLUMINATING RETICLES IN OPTICAL INSTRUMENTS

Benjamin F. Bush, 7860 Eagles Nest Rd., Sacramento, Calif. 95826

Filed Jan. 27, 1977, Ser. No. 763,236
Int. Cl.[3] F41G *1/32*
U.S. Cl. 33—241 4 Claims

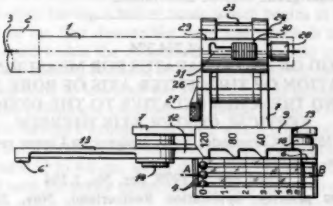


1. In an optical instrument having an objective lens within an outer tube member, a reticle and an illumination means for illuminating said reticle, said reticle mounted within said tube member along the longitudinal axis thereof, said illumination means comprising a pair of mirror means mounted to the inside surface of the tube member on either side of said axis adjacent said reticle, said mirror means having curved shapes for focusing light entering said tube member through said objective lens onto said reticle to illuminate same.

4,214,372
AIMING INSTRUMENT

Maurice Rusbach, Nyon, Switzerland, assignor to Sarmac S.A., Carouge, Switzerland

Filed Jul. 28, 1977, Ser. No. 819,987
Claims priority, application Switzerland, Aug. 12, 1976, 10249/76
Int. Cl.[2] F41G *1/02*
U.S. Cl. 33—252 2 Claims



1. An aiming instrument for small arms weapons, comprising a frame, means to secure the frame to the barrel of a weapon, sighting means comprising an alidade carried by the frame and swingable about a horizontal axis relative to the frame to establish a vertical reference, a scale carried by the frame for reading said vertical reference in terms of range, said scale being visible from the rear to a user of the weapon, chamber means carried by said frame, said chamber means being arcuate about a horizontal axis, a volume of liquid in said chamber means, said chamber means having indicia to indicate the position of said body of liquid therein, the horizontal extent of said chamber means being substantially greater than the extent of said

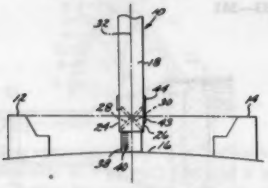
chamber means radially of the last-named axis, whereby any tilting of said axes is easily visible because said body of liquid then occupies different positions relative to said indicia on opposite sides of said chamber means.

4,214,373

GRADE CHECKER

William R. Vessey, 16442 Harbour La., Huntington Beach, Calif. 92649

Filed Oct. 2, 1978, Ser. No. 947,728
Int. Cl.[2] G01C *9/00, 5/00, 15/00*
U.S. Cl. 33—277 **3 Claims**



1. A grade checker for determining the elevation of a grade relative to a pair of reference points spaced apart on opposite sides of the grade, said checker comprising:

an elongated sighting tube adapted for location between the pair of reference points, the upper extremity of said sighting tube including a viewing window, and the lower extremity of said sighting tube including a pair of oppositely facing target windows;

light directing means located in said lower extremity of said sighting tube adjacent said target windows and defining a pair of oppositely inclined, side-by-side reflecting surfaces located adjacent said target windows, respectively, and operative to display to a viewer at said viewing window, aligned images of said reference points each aligned with respect to the other when said target windows are in said alignment with said reference points; and,

a grade engaging element mounted to said sighting tube and longitudinally extensible relative to said sighting tube for elevating said target windows into alignment, respectively, with said reference points, said sighting tube and said grade engaging element including indication means formed thereon for indicating the amount of relative longitudinal extension therebetween whereby the elevation of said grade may be determined.

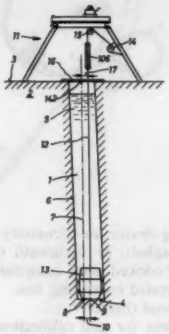
4,214,374

METHOD OF AND APPARATUS FOR MEASURING THE DEVIATION OF THE CENTER AXIS OF BORE HOLES AND TRENCHES RELATIVE TO THE DESIGN VERTICAL CENTER AXIS THEREOF

Giosue Miotti, Carpenedo, Italy, assignor to Comar reg. Trust, Vaduz, Liechtenstein

Filed Jan. 9, 1979, Ser. No. 2,154
Claims priority, application Switzerland, Nov. 29, 1978, 12228/78
Int. Cl.[3] E21B *47/02;* **G01C** *9/00;* **E02D** *27/00*
U.S. Cl. 33—300 **17 Claims**

1. In an apparatus for measuring the deviation of the run of the actual center axis of bore holes or trenches filled with bentonite relative to the design vertical center axis thereof, the excavation of said bore holes and trenches proceeding by utilization of bentonite fluid filling substantially completely said bore holes and said trenches such to back the side walls of said bore holes and said trenches to prevent a cave-in thereof, which apparatus comprises a gauge means arrestable inside said bore hole or said trench, a cable means for suspending and controlling said gauge means, a supporting frame means for supporting said gauge means, a tensioning device means to apply a predetermined tension force at one end of said cable means, and an instrument means to control the verticality of said cable means, an improvement comprising that said cable means includes a service cable means and a measuring cable means, said service cable means being interchangeable with said measuring cable means, said gauge means including a predetermined mass resulting in a force of gravity exceeding the tensile strength of said measuring cable means, wherein said gauge means includes a body provided with a plurality of



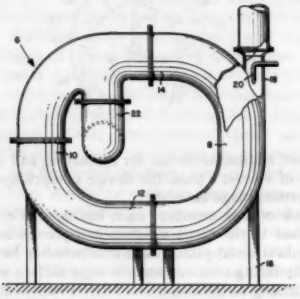
circumferentially arranged protrusions for keeping said gauge means aligned within said bore hole or trench, said cylindrical body including a centrally arranged socket means open toward the top end of said body, a top section of said body being shaped in form of a funnel such to provide a guideway leading to said socket means, the improvement further comprising a plug means arranged to be suspended at one end from said cable means, which plug means is arranged to releasably lock into said socket means.

4,214,375

FLASH DRYER

Francis E. Albus, Hatboro, and George W. Fendler, Doylestown, both of Pa., assignors to Aljet Equipment Company, Willow Grove, Pa.

Continuation-in-part of Ser. No. 805,833, Jun. 13, 1977, abandoned. This application Jun. 2, 1978, Ser. No. 911,889
Int. Cl.[2] F26B *3/08*
U.S. Cl. 34—10 **4 Claims**



2. A method of drying particulate matter comprising: introducing wet solid particulate matter into a conduit, introducing a single stream of heated gas into said conduit and into contact with said particulate matter therein, withdrawing dried solid particulate matter from said conduit, and withdrawing gas from said conduit wherein the rates of introduction and withdrawal of gas are the same and the rates of introduction and

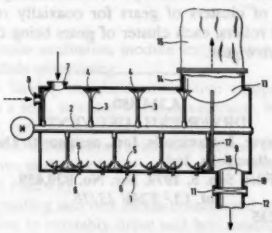
withdrawal of solid matter are the same, and controlling the rates of introduction and withdrawal of gas and solid matter so that the quantity per unit time of solid material passing a point in the conduit immediately following the material inlet, divided by the quantity of solid material introduced and withdrawn from the conduit per unit time is less than the quantity per unit time of gas passing a point in said conduit immediately following the gas inlet divided by the quantity of gas introduced and withdrawn per unit time.

4,214,376

PROCESS AND APPARATUS FOR THE CONTINUOUS DRYING AND/OR GRANULATING OF LOOSE MATERIAL

Roland Lücke, Paderborn-Wewer, and Eberhard Lipp, Paderborn, both of Fed. Rep. of Germany, assignors to Gerbruder Lodige Maschinenbau-Gesellschaft mbH, Fed. Rep. of Germany

Filed Jul. 10, 1978, Ser. No. 923,342
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1977, 2730941; Jul. 8, 1977, 2730942
Int. Cl.[3] F26B *3/08*
U.S. Cl. 34—10 24 Claims



1. A process for the continuous drying and/or granulating of loose material located within a closed chamber comprising the steps of:

continuously blowing a gas such as air as a drying medium through the loose material simultaneously with the material being mechanically swirled up inside of said closed chamber,

said gas being blown in a direction transverse to that in which the material is being swirled up to provide a conveying force for moving the material through said chamber;

the improvement comprising:

subjecting said material to a mechanical conveying force as it is swirled up,

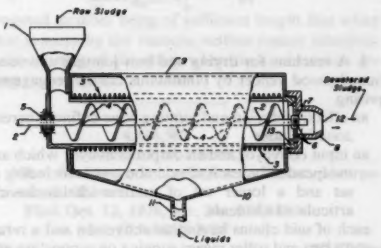
said mechanical conveying force being smaller than and in a direction opposite to that in which the material is conveyed by said gas force.

4,214,377

MECHANICAL DEWATERING PROCESS

Vere Maffet, West Chester, Pa., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 891,437, Mar. 29, 1978, Pat. No. 4,160,732, and a continuation-in-part of Ser. No. 909,587, May 25, 1978, which is a continuation-in-part of Ser. No. 775,673, Mar. 8, 1977, Pat. No. 4,128,946, Ser. No. 813,577, Jul. 7, 1977, Pat. No. 4,098,006, Ser. No. 813,578, Jul. 7, 1977, Pat. No. 4,099,336, Ser. No. 844,097, Oct. 20, 1977, Pat. No. 4,121,349, Ser. No. 858,879, Dec. 8, 1977, Pat. No. 4,161,825, and Ser. No. 891,437, Mar. 29, 1978, Pat. No. 4,160,732, which is a continuation-in-part of said Ser. No. 813,577, said Ser. No. 858,879 is a continuation-in-part of said Ser. No. 813,577, and said Ser. No. 813,578, said Ser. No. 844,097, is a continuation-in-part of said Ser. No. 813,578, said Ser. No. 813,577, and said Ser. No. 813,578 an continuation-in-part of said Ser No. 775,673.
Int. Cl.[2] F26B *7/00*
U.S. Cl. 34—12 7 Claims



1. A process for dewatering fibrous organic waste which comprises the steps of:

(a) passing a feed stream comprising organic waste and which comprises 50 wt.% water and at least 5 wt.% fibers on a dry basis into a first end of a first dewatering zone comprising a cylindrical chamber having a cylindrical porous wall formed by parallel windings which are spaced apart by a distance of about 0.0075 to about 0.013 cm. with the inner surface of the windings of the porous wall being attached to longitudinal support rods which extend from a first end to a second end of the porous wall;

(b) pressurizing the feed stream within the first dewatering zone to a superatmospheric pressure by rotating a screw conveyor having a helical blade which begins at the first end of the first dewatering zone and which is centrally mounted within the cylindrical chamber while constricting the opening available at a second end of the first dewatering zone to less than the available cross-sectional area of the cylindrical chamber, the blade of the screw conveyor having a helical outer edge which is separated from the inner surface of the support rods by a distance of from about 0.10 to 4.0 cm. along the length of the porous wall, and with the screw conveyor having a length to diameter ratio above 2:1;

(c) maintaining a substantially continuous and unagitated cylindrical layer of filter media comprising fibers derived from the feed stream in an annular space located between the inner surface of the porous wall of the cylindrical chamber and the helical outer edge of the screw conveyor, and simultaneously transferring the organic waste located between the grooves of the helical blade of the screw conveyor and surrounded by said cylindrical layer of filter media from the first end of the first dewatering zone to the second end of the first dewatering zone;

(d) withdrawing water radially from the first dewatering zone through the porous wall and through said cylindrical layer of filter media; and,

(e) withdrawing a first dewatering zone solids stream having

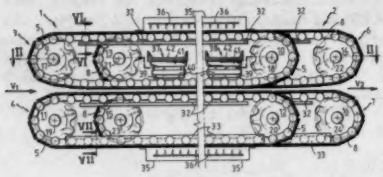
a higher organic waste solids content than the feed stream from the second end of the first dewatering zone.

4,214,378

MACHINE FOR DRYING AND BUTT-JOINTING WOOD VENEER BY CONTINUOUS CONTACT ENGAGEMENT

Jean-Marie M. Martin, 23, rue de Turin, Paris 8eme, France

Filed Dec. 19, 1978, Ser. No. 970,897
Claims priority, application France, Dec. 22, 1977, 77 38743
Int. Cl.[2] F26B *13/12*
U.S. Cl. 34—148 **5 Claims**



1. A machine for drying and butt-jointing unwound or sectioned wood veneer by continuous contact engagement comprising

an effective drying and jointing zone defined therein, which zone includes

an input conveyor and an output conveyor which are driven independently, each of said conveyors including an upper set and a lower set of endless chains having interarticulated elements,

each of said chains having an active run and a return run,

sprockets and roller means running on supporting guide-rails simultaneously driving said chains,

pairs of said active runs facing each other and compressing and conveying the veneer therebetween through the own weight of said endless chains,

means to heat said return runs,

said input and output conveyors adjoiningly juxtaposed in said effective drying and jointing zone in the form of groups of active runs of alternating ones of said chains belonging to each of said conveyors,

said active runs arranged in an even number of said chains in one said conveyor and an odd number of said chains in the other said conveyor,

first pressure-adjustment means provided at an entrance to said effective zone above said chains of said input conveyor including weighty elements associated with an elastically deformable chamber,

second pressure-adjustment means provided at an exit from said effective zone above said chains of said output conveyor including weighty elements associated with an elastically deformable chamber,

said input conveyor being driven at a higher speed than said output conveyor.

4,214,379

DRYER RACK USING STAGGERED ROLLERS

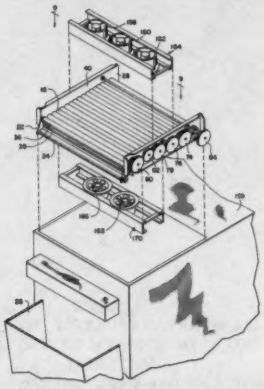
Henry F. Hope, 3192 Huntingdon Rd., Huntingdon Valley, Pa. 19006, and Stephen F. Hope, 2548 Wyandotte Rd., Willow Grove, Pa. 19090

Continuation-in-part of Ser. No. 737,199, Oct. 29, 1976, Pat. No. 4,079,635, which is a continuation-in-part of Ser. No. 555,961, Mar. 10, 1975, Pat. No. 3,989,176, said Ser. No. 555,961, is a continuation-in-part of Ser. No. 457,829, Apr. 4, 1974, abandoned, and Ser. No. 513,244, Oct. 9, 1974, Pat. No. 3,952,610. This application Mar. 24, 1977, Ser. No. 780,922
Int. Cl.[2] F26B *13/08*
U.S. Cl. 34—159 **20 Claims**

1. A dryer rack for transporting and drying webs, such as photographic films, comprising:

a series of transport rollers positioned in a staggered pattern without forming nips to transport the films through the rack along a sinuous path, the rollers positioned on one side of the films being spaced closely enough together so that the rollers alone channel air directed into the spaces between the rollers in a manner which accelerates the air into jets of air impinging on the films transported through the rack, the space between adjacent rollers being free and unobstructed by means for conducting an air flow between the rollers and on sections of films to be dried;

fan means positioned adjacent the rollers for directing air upon at least some of the rollers and upon the films being



transported thereby, the air flowing freely from the fan means to the tranport rollers without confinement by ducts or tubes; and

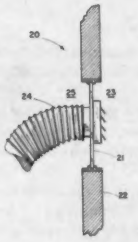
means for rotating the rollers including a plurality of power transmitting gears driving each other, a plurality of cluster drive gears coaxially rotated by the power transmitting gears, each cluster drive gear having a pitch diameter smaller than the associated power transmitting gear, and a plurality of clusters of gears for coaxially rotating the transport rollers, each cluster of gears being driven by a cluster drive gear.

4,214,380

DRYER EXHAUST VENT

Stephen T. Meyer, Indianapolis, Ind., assignor to Deflecto Corporation, Indianapolis, Ind.

Filed Sep. 5, 1978, Ser. No. 939,459
Int. Cl.[2] F24F *13/18*
U.S. Cl. 34—235 **16 Claims**



1. A clothes dryer exhaust vent for connecting an interior dryer exhaust duct to the atmosphere said dryer exhaust vent comprising:

a frame portion;

a connecting duct section integral with said frame portion,

said duct section including a flow passageway therethrough, said flow passageway extending through said frame portion;

a plurality of tapered tab members integral with said connecting duct section and of a suitable size and configuration for snapping into corresponding recess portions of an adjoining duct section; and

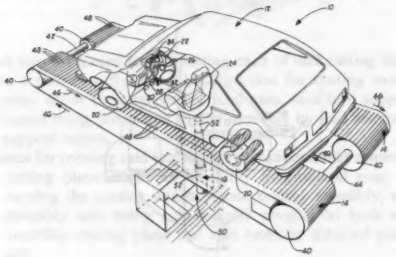
a plurality of louvered fin members pivotally retained within said frame portion and outwardly movable, in response to dryer exhaust, between a flow-passageway-closed position and a flow-passageway-open position, each one of said plurality of fin members having two side edges, an upper pivot axis edge and a lower pivoting edge, each of said fin members further including two oppositely disposed pivot stems in longitudinal alignment with said upper pivot axis edge and extending beyond said side edges, said pivot stems extending into said frame portion.

4,214,381

RESPONSE EVALUATION MODULE FOR TEACHING DRIVER TRAINING

George H. Clark, and Mary A. Clark, both of Carlsbad, Calif., assignors to Rescorp, Carlsbad, Calif.

Filed Nov. 13, 1978, Ser. No. 959,729
Int. Cl.[2] G09B *9/04*
U.S. Cl. 35—11 R 8 Claims



1. A response evaluation module for teaching driver training, the module comprising:

a vehicle having standard automotive equipment therein such as a seat, steering wheel, accelerator, brakes, speedometer, ignition, and tires;

movable belt means constructed and adapted when mounted to receive said vehicle tires thereon, said belt means simulating a roadway;

means mounting said belt means constructed and adapted to be driven to rotatably drive said belt means;

a telescopeable notocord attached to the bottom of said vehicle and means stationary relative said vehicle and operable to allow movement of said vehicle forward, backward, and laterally on said belt means for simulating sliding, skidding, fish tailing, and hydroplaning; and

a dome surrounding said vehicle and providing a hemisphere screen for showing landscape on the screen to simulate actual road traffic conditions.

4,214,382

TRAINING BAR

Shin Matsutani, 1093 W. 26th St., #4, San Pedro, Calif. 90731

Filed Aug. 4, 1978, Ser. No. 930,923
Int. Cl.[3] A63K *3/00*
U.S. Cl. 35—29 R 3 Claims

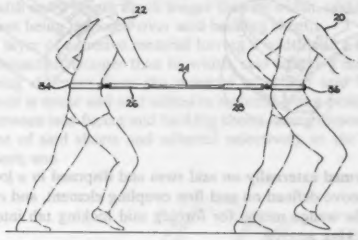
1. A training bar for use with first and second runners, said training bar comprising:

a substantially rigid elongated member having first and second ends;

a first belt to be worn by said first runner, said first belt being coupled to said first end of said member;

a second belt to be worn by said second runner, said second belt being coupled to said second end of said member;

a first shock absorber disposed between said first end of said member and said first belt;



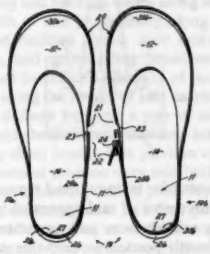
said elongated member being of sufficient length that when said bar is worn by the runners, neither runner interferes with the running of the other when the two runners are running in tandem.

4,214,383

STORABLE SLIPPERS

James H. Allen, Covington, Ky., assignor to 'Totes', Incorporated, Loveland, Ohio

Filed Oct. 12, 1978, Ser. No. 950,565
Int. Cl.[2] A43B *3/24*
U.S. Cl. 36—1 10 Claims



1. A pair of shoes comprising

a right foot shoe and a left foot shoe, and

a fastener connected to each of said shoes, said fasteners cooperating to connect said right and left shoes together in a storage configuration where the shoe uppers are in face-to-face relation, and where the shoe soles constitute the outer faces, in the storable package so formed when storage of the shoes is desired by a user.

4,214,384

REPLACEABLE HEEL CONSTRUCTION FOR SHOES

Ricardo Gonzalez R., Carrera 13 No. 37-43, Piso 12, Bogota, Colombia

Filed Oct. 18, 1978, Ser. No. 952,391
Int. Cl.[2] A43B *21/36*
U.S. Cl. 36—42 5 Claims

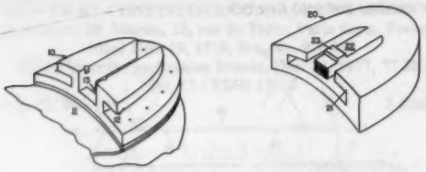
1. A replaceable heel construction for shoes comprising

a first coupling element,

a second coupling element slidably mounted in interlocking relationship on said first coupling element and defining a shoe heel thereon,

a flexible stem mounted in cantilevered relationship on said second coupling element, and

means for releasably securing said second coupling element to said first coupling element comprising a locking tab



formed externally on said stem and disposed in a locking groove defined on said first coupling element, and releasable wedge means for forcing said locking tab into said locking groove.

4,214,385

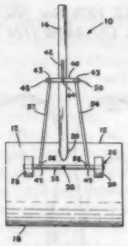
APPARATUS FOR TAKING UP AND REMOVING MATTER FROM A SURFACE

Boleslaw Baranowski, and William Baranowski, both of 306 Harrison Gardens, Harrison, N.J. 07029

Filed Oct. 16, 1978, Ser. No. 951,754

Int. Cl.[2] E01H *5/02*

U.S. Cl. 37—130 **2 Claims**



1. In an apparatus for taking up and removing matter from a surface upon movement of said apparatus in a predetermined direction along said surface, said apparatus having a scoop portion and a handle portion secured thereto, said scoop portion having a front surface for engagement with said matter upon said movement of said apparatus and a back surface, the improvement comprising:

an axle;

at least one wheel mounted rotatably on said axle and for rolling along said surface, said wheel having a predetermined diameter;

said axle secured to said apparatus at a predetermined point therealong and for being positioned parallel to said surface and normal to said predetermined direction; and

upon said wheel rotating along said surface, said predetermined diameter of said wheel and said axle secured to said apparatus at said predetermined point maintaining said scoop portion at a predetermined angle with respect to said surface;

means for selectively skewing said scoop portion about a normal to said surface whereby said scoop portion may be selectively skewed to one of a plurality of predetermined positions relative to said predetermined direction, said skewing means further comprising:

a first rod and a second rod substantially equal in length to said first rod;

said first rod pivotally secured at one end thereof adjacent to one end of said axle and substantially perpendicular thereto;

said second rod pivotally secured at one end thereof adjacent the other end of said axle and substantially perpendicular thereto;

the other end of said first rod pivotally secured to one end of a longitudinally extending cross-member;

the other end of said second rod pivotally secured to the other end of said cross-member;

said cross-member pivotally mounted on said handle for pivotal movement about a second predetermined point;

lever means secured to said cross-member for pivoting said cross-member about said second predetermined point upon application of force;

whereupon, pivoting of said cross-member about said second predetermined point will cause said first and second rods to rotate said axle about said predetermined point.

4,214,386

BUCKET WHEEL EXCAVATOR WITH VIBRATING BUCKETS

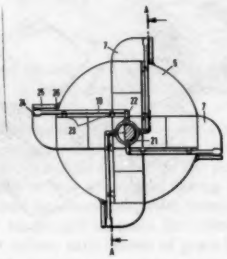
Rüdiger Franke, Mettmann, Fed. Rep. of Germany, assignor to DEMAG Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

Filed Feb. 7, 1979, Ser. No. 10,314

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1978, 2805389

Int. Cl.[2] E02F *3/24*

U.S. Cl. 37—190 **8 Claims**



1. Apparatus for mining and excavating, comprising

(a) a support;

(b) a bucket wheel rotatable on said support;

(c) power means on said support for rotating said bucket wheel;

(d) a plurality of circumferentially spaced excavating buckets on said wheel;

(e) cutting elements pivotally positioned in each said bucket; the improvement characterized by

(f) vibrating means disposed in the axis of said bucket wheel;

(g) a plurality of vibrator bars on said wheel; and

(h) each said bar extending between said vibrating means and one of said cutting elements;

(i) whereby the vibrating energy from said vibrating means is transmitted over said bars to each of said cutting elements.

4,214,387

TRENCHING APPARATUS AND METHOD

Herman F. Boehme; Avadhesh N. L. Srivastav, and Joe C. Lochridge, all of Houston, Tex., assignors to Brown & Root, Inc., Houston, Tex.

Filed Jun. 1, 1978, Ser. No. 911,370

Int. Cl.[2] B02F *3/88*

U.S. Cl. 37—195 **26 Claims**

1. Apparatus for trenching on the bottom of a body of water comprising

a movable frame member,

at least one cutting assembly,

assembly support means connected to said frame member for supporting each cutting assembly and for moving each cutting assembly at least in a laterally directed plane substantially normal to a longitudinal axis of said frame member,

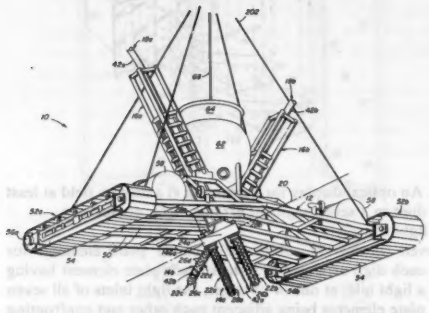
each said cutting assembly comprising

at least two actuatable cutting tools, each tool having

a mechanical cutting means secured thereto for cutting movement, and

drive means actuatable for driving, relative to a cutting tool axis, said cutting means in said cutting movement,

said cutting tool axes for each assembly being substantially aligned in an assembly cutting plane,



tool support means for supporting each of said cutting tools in a downwardly extending direction for cutting movement about their respective tool axes, said tool support means being connected to and movable by said assembly support means,

means for rotating said tool support means and said assembly cutting plane about an assembly longitudinal axis, for varying the cutting width of said cutting assembly, said assembly axis being substantially parallel to both said assembly cutting plane and said laterally directed plane, and

spoil removal means, supported in a proximate relation to each said cutting assembly, for removing spoil produced by operation of each said cutting assembly.

4,214,388

ADHESIVE LAYER POCKETED SCROLL FOR READING MACHINE

Herbert C. Dickey, North Reading, Mass., assignor to The Ealing Corporation, South Natick, Mass.

Continuation-in-part of Ser. No. 772,982, Feb. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 581,588, May 28, 1975, Pat. No. 4,020,576. This application Jul. 14, 1978, Ser. No. 924,496

Int. Cl.[3] A47G *1/17*; G03B *21/64*

U.S. Cl. 40—159 **9 Claims**

1. A pocketed scroll for the holding and display of pages of reading material in a reel-to-reel reading machine, comprising:

(a) a flexible planar backing sheet having a width and a length much longer than its width;

(b) a layer of adhesive disposed over said flexible backing sheet;

(c) a pocket-forming flexible planar sheet disposed over said layer of adhesive, said pocket-forming flexible planar sheet defining a plurality of holes in bands periodically spaced along the length of said pocket-forming sheet, said bands extending across the width of said pocket-forming sheet;

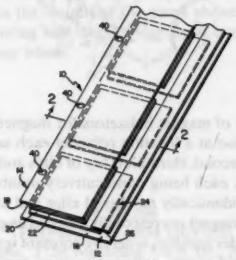
(d) a flexible transparent planar facing sheet disposed over said pocket-forming sheet, said facing sheet having a width and a length substantially longer than its width, said facing sheet adhering to said backing sheet in the area defined by said holes.

3. A pocketed carrier for the presentation of pages of conventional printed matter in scroll form within a reel-to-reel reading machine comprising:

(a) a backing sheet having a width and a length much longer than its width;

(b) a relatively thin and transport facing sheet having a width and a length much longer than its width, said facing sheet being disposed over said backing sheet;

(c) a layer of adhesive material having a width and a length substantially longer than its width, said adhesive material being different from the material of which said facing sheet is made and said adhesive material being positioned between said facing and backing sheets, being disposed on one of said sheets and adhered selectively to the other sheet; and



(d) sheet means, disposed between said adhesive layer and said other sheet, said sheet means being positioned, configured and dimensioned to achieve selective adhesion between said facing and backing sheets along seams disposed across the width of and periodically along the length of said facing and backing sheets after activation of said adhesive layer, said seams being positioned, configured and dimensioned to define a plurality of pockets, periodically disposed along the length of said carrier, each of said pockets being defined between a pair of adjacent seams, the width of said sheet means extending across the width of said backing sheet from a first position over said backing sheet to a second position over said backing sheet and said facing sheet extending from a point between the edge of the backing sheet, adjacent said first position, and the first position, and extending toward but not reaching said second position, to define a clearance between the edge of said facing sheet and said second position.

4,214,389

APPARATUS AND METHOD FOR IGNITION IDENTIFICATION OF INTERNAL COMBUSTION ENGINES

Harry H. Fitzgerald, 16023 47th Ave. S., Seattle, Wash. 98188, and Robert G. Fitzgerald, Box 6071, Odessa, Tex. 79760

Filed Oct. 4, 1977, Ser. No. 839,398

Int. Cl.[2] G09F *3/00*

U.S. Cl. 40—316 **1 Claim**

1. A universal ignition identification apparatus for engines having a plurality of cylinders, a distributor, and ignition cables, comprising in combination:

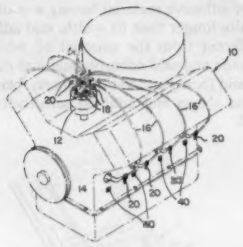
(a) a first plurality of clips, each having a two-legged, spring-biased portion for attachment to said engine distributor by insertion of at least one leg into each said distributor sockets,

(b) a second plurality of clips, each having a two-legged, spring-biased portion for resilient attachment about each said ignition cables near each said cable distributor end portion,

(c) a third plurality of clips, each having a two-legged,

spring-biased portion for resilient attachment about each said ignition cables near each said cable cylinder end portion,

(d) said two-legged clips of said first, second and third plurality are identically shaped clips arranged in three consecutively numbered sets and wherein each clip is provided with at least one thin and flat extending leg portion made from a thermo-plastic material,



(e) a plurality of magnet indicators for magnetic attachment at said engine at a location adjacent each said cylinder,

(f) said first, second, third plurality of clips and said plurality of magnets, each being consecutively numbered, and

(g) each said identically numbered clips and said identically numbered magnet corresponding to said engine associated firing cylinder number, whereby constant ignition identification of said engine cylinder/ignition sequence is maintained for external ignition component replacement.

4,214,390

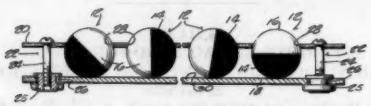
PANEL ASSEMBLY

Gerard Kluiters, Tholenseweg 7, Amstelveen, Netherlands

Filed Jan. 11, 1979, Ser. No. 2,679

Int. Cl.[2] G09F *9/30, 9/40*

U.S. Cl. 40—447 **4 Claims**



1. A decorative panel assembly comprising a first panel, a second panel including a plurality of apertures therethrough, means for supporting said second panel in spaced parallel relation from said first panel, and a plurality of spheres housed between said first panel and said second panel, said spheres being freely rotatably supported in said apertures by a surface of said first panel and by the peripheries of said apertures in said second panel and for universal rotation in any direction to permit any surface portion of the spheres to be exposed through said apertures, and said spheres each including a portion projecting through said apertures, and at least a plurality of said spheres each having a portion of its external surface being one color shade and another portion of its external surface being another color shade, said spheres being adapted to be rotated manually.

4,214,391

OPTICAL NUMERICAL SEGMENT DISPLAY

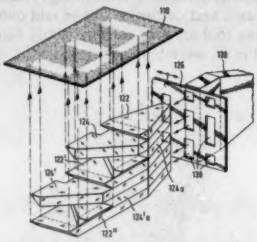
Walter Angst, Zumikon, Switzerland, assignor to Ackeret Design & Engineering, Ebmatingen, Switzerland

Filed Feb. 13, 1978, Ser. No. 877,221

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1977, 2707081

Int. Cl.[2] G09F *13/18*

U.S. Cl. 40—451 **55 Claims**



1. An optical display for presenting at a display field at least one digit in a seven segment arrangement, comprising

a light source,

seven transparent substantially planar plate elements for each digit arranged in a stack, each plate element having a light inlet at one of its edges, the light inlets of all seven plate elements being adjacent each other and confronting the light source to be irradiated by said light source,

a coded shutter element having transparent and opaque areas being disposed between said light source and said plate element light inlets, said shutter element being incrementally movable across the light source and the light inlets of said plate elements to permit and prevent, respectively, light passage from said light source into said plate elements,

said plate elements having means causing the light injected into the light inlet of a plate element to propagate in the plate element substantially parallel to the plane of said plate element,

each plate element having a chamfered edge portion remote from said light inlet of said plate element, said chamfered edge portion having a prism surface oriented oblique to the plane of the plate element and totally reflecting light impinging thereon out of said plane of said plate element in a direction transversely thereof to present one segment of the digit, the display field comprising a plane substantially parallel to the plate elements, said chamfered edge portions of each of the seven stacked plate elements corresponding to one of the seven segments forming a digit, whereby substantially all of the light injected into the light inlet of a plate element will illuminate the respective segment.

4,214,392

DISPLAY STRUCTURE

Gary R. Virsen, Rte. #2, Box 42, Rogers, Minn. 55374

Filed Aug. 25, 1978, Ser. No. 936,723

Int. Cl.[2] G09F *07/20*

U.S. Cl. 40—605 **4 Claims**

1. A display structure comprising:

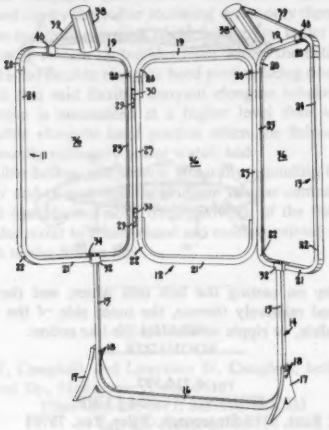
(a) frame means including at least a pair of generally rectangular frames each defining a display area and each including a horizontal top frame member having downturned opposite end portions and a U-shaped frame member having a horizontal bottom portion and a pair of laterally spaced generally vertical tubular side frame portions having open upper ends;

(b) said end portions of the top frame member including

connector pins received in respective open upper ends of said side frame portions;

(c) said side frame portions having opposed longitudinal slots to the interior thereof;

(d) display panels each disposed in a different display area and each having outwardly projecting mounting tabs at the opposite side edges thereof received in the slots of respective side frame members, said mounting tabs having lower ends engaging the lower ends of said slots to be supported thereby;



(e) hinge means connecting said frames for pivotal movement relative to each other on a vertical axis;

(f) and leg means for supporting said frames comprising a generally U-shaped member having a bottom cross bar portion and laterally spaced leg portions extending upwardly from said cross bar portion, further including a yoke element at the upper end of one of said leg portions and slidably receiving one of said bottom frame portions, and a clamping member on said yoke element for releasably locking said one of the bottom frame portions against sliding movements in said yoke element.

4,214,393

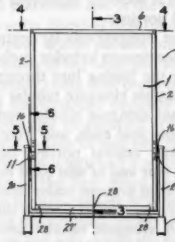
COUNTERBALANCE DISPLAY SIGN

Charles H. Long, Ormond Beach, Fla., assignor to Stout Industries, Inc., St. Louis, Mo.

Continuation of Ser. No. 857,658, Dec. 5, 1977, abandoned, which is a continuation of Ser. No. 732,505, Oct. 14, 1976, abandoned. This application Dec. 7, 1978, Ser. No. 967,243

Int. Cl.³ G09F *19/00*

U.S. Cl. 40—613 **2 Claims**



1. A display sign comprising a normally vertically disposed, relatively thin, normally non-air resistant panel for inscription of promotional and informational material thereon, said panel having lateral marginal portions contoured into general box-like configuration, channel-shaped members secured on said panel marginal portions, transversely aligned pivot pins projecting laterally outwardly from opposite lateral marginal portions of said panel and being fixed thereon, an upright presented in laterally spaced relaionship to each panel marginal portion, said pivot pins being received in the outer portions thereof within each of said upright supports thereby rendering said panel swingable within a vertical plane about said uprights, said pivot pins developing a transverse pivot axis demarcating the upper limit of a zone constituting the lower third portion of said panel, counterweights secured to the lower end portion of said panel on opposite faces thereof and between the lateral marginal portions thereof for movement therewith and being spacedly below said pivot axis, said counterweights being of such weight that when combined with the weight of the panel below said pivot axis will approximate between two and three times the weight of the panel above said pivot axis thereby preventing said display sign from overturning under impact of strong winds.

4,214,394

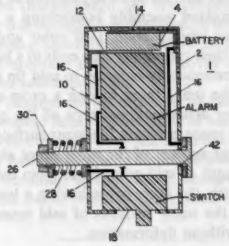
FISHING ALARM DEVICE

Regis P. Shogan, 1739 Mountain View Dr., Monroeville, Pa. 15146

Filed May 19, 1978, Ser. No. 907,505

Int. Cl.² A01K *97/12*

U.S. Cl. 43—17 **4 Claims**



1. An alarm device adapted to be mounted on a fishing rod having an electrically insulating fishing line, comprising:

an electrically driven alarm;

an electrical power source; and

adjustably biased structure for supporting said fishing line and for completing an electrical circuit through said alarm and power source upon removal of said fishing line from a supported position, said structure including a fixed contact surface having an opening therethrough and a bar movable in spaced relation through said opening, said bar having a movable contact surface contactable with said fixed contact surface upon movement of said bar within said opening, said fishing line being removably supportable between said fixed contact surface and said movable contact surface, said structure biasing said movable contact surface toward contact with said fixed contact surface, said fixed contact surface and said moveable contact surface being electrically connected to said electrically driven alarm and said electrical power source such that said electrical circuit is completed when said moveable contact surface contacts said fixed contact surface upon removal of said fishing line.

4,214,395
LEVER ASSEMBLIES

Benjamin P. Caldwell, Jr., P.O. Drawer D, Bluffton, S.C. 29910

Continuation of Ser. No. 727,436, Sep. 28, 1976, abandoned. This application Oct. 17, 1978, Ser. No. 952,208
Int. Cl.[2] A01K *87/00*
U.S. Cl. 43—18 R 22 Claims

1. Composite, resilient, cantilevered lever means useful in the construction of sporting equipment comprising a handle portion and at least one elongated resilient lever assembly extending therefrom to a tapered tip end, the handle portion being held substantially fixed and the lever assembly being flexed from its normal position of coaxiality of its elongated axis with the handle portion upon application of a force to said tip end, said elongated assembly comprising a hollow outer lever and an inner lever therein, said outer and inner levers being attached at their respective base ends to a handle portion, the outer lever continuously tapering to said tip end from said handle portion, the inner lever having a cross-sectional area less than the inner cross-sectional area of the outer lever to define an annular space between the inner surface of the outer lever and the outer surface of the inner lever along at least a portion of the length of said outer lever from the handle portion toward said tip, the inner lever having a length less than said outer lever, the outer surfaces of said inner lever being continuous and without deformation.

4,214,396
FISHING LURES

Herman P. Firmin, 11325 Granberry St., Baton Rouge, La. 70811

Filed Sep. 11, 1978, Ser. No. 941,567
Int. Cl.[2] A01K *85/00*
U.S. Cl. 43—42.24 10 Claims

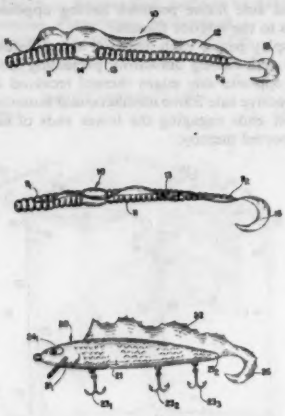
1. As an article of manufacture, an aquatic fishing lure for use with a rod, line and hook, by virtue of which the lure can be attached via the line to the rod and used in casting, comprising

an elongate body member, and

a thin, flexible elongate dorsal fin which extends longitudinally over a major portion of the length of the body member, said fin including

an inner side which is attached in substantially a straight line with, continuous and tautly adjoined throughout its length to said elongate body member, and

an outer, unattached side of longer length than said inner side, said outer side being continuous loose, gathered and laying on both sides of the line formed by the inner side of said fin, and ruffled as contrasted with said inner side, some of said ruffles lying to one side of a vertical plane through said straight line, and others of the ruffles lying to the other side,



whereby on casting the lure into water, and the lure is moved relatively thereto, the outer side of the fin will undulate, or ripple to simulate life-like action.

4,214,397
FISHING WORM LURE

Leslie W. Kent, 5111 Stagecoach, Tyler, Tex. 75701

Continuation of Ser. No. 761,948, Jan. 24, 1977, abandoned. This application Jul. 24, 1978, Ser. No. 927,511
Int. Cl.[2] A01K *85/00*
U.S. Cl. 43—42.28 8 Claims

1. A flexible fishing lure for creating visual and auditory stimuli while being towed through water comprising:

a solid flexible elongate head portion having a predetermined cross sectional shape and having front and rear ends, said solid flexible elongate head portion formed from flexible elastomeric material for providing lifelike flexibility and for being penetrated by the pointed end of a fishing hook while being of sufficient dimension and strength for positively and securely receiving and supporting the fishing hook inserted therein to provide a water tight connection between said solid flexible elongate head portion and the fishing hook, such that said fishing hook pointed end penetrates and is securely supported by said solid flexible elongate head portion;

a flexible buoyant elongate tubular central portion having an integral and continuous exterior surface to prevent water from entering the fishing lure through said exterior surface of said flexible elongate tubular central portion, said flexible buoyant elongate tubular central portion further having front and rear ends, said front end of said flexible elongate tubular central portion being integrally connected to said rear end of said solid flexible elongate head portion in order to prevent water from entering said flexible elongate tubular central portion through said front end of said flexible elongate tubular central portion and to permit the fishing lure to twist and flex during the towing thereof through the water;

structure forming a centrally disposed hollow continuous unobstructed closed cavity extending through said flexible elongate tubular central portion and having a uniform

cylindrical cross sectional shape and being disposed substantially parallel to said exterior surface of said flexible elongate tubular central portion, one end of said hollow continuous unobstructed closed cavity being closed by said solid flexible elongate head portion and the opposite end thereof being open, such that said centrally disposed hollow continuous unobstructed closed cavity fills with air prior to being submerged in water, said cavity being configured and structured to retain air to therefore be made buoyant, said hollow continuous unobstructed closed cavity thereafter receiving water only through said open end during towing of the fishing lure under water in order to release air bubbles from within the fishing lure, said solid flexible elongate head portion being nonbuoyant such that said flexible buoyant elongate tubular central portion is maintained at a higher level than said solid flexible elongate head portion when the fishing lure is generally stationary under water; and

a flexible hollow tail portion integrally extending from said rear end of said flexible elongate tubular central portion and operable to move during towing of the fishing lure under water to create visual and auditory stimuli to attract fish to the fishing lure.

4,214,398

FISHHOOK

John W. Campbell, and Lawrance W. Campbell, both of 1120 Federal Dr., Montgomery, Ala. 36107

Filed Oct. 28, 1977, Ser. No. 846,533
Int. Cl.[2] A01K *83/00*
U.S. Cl. 43—43.16 **3 Claims**

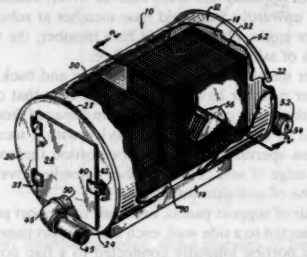
1. A fishhook comprising, a bend defining a gap between an upwardly directed point at one end and an upwardly directed other end, a lower shank portion whose length equals the gap width, connected to said other end of the bend and lying in the same plane, an upwardly directed first offset connected to the upper end of the lower shank portion and laterally inclined with respect to the plane of the bend and lower shank portion, the lower shank portion being that portion of the shank commencing at a point diametrically opposite the tip of said upwardly directed point and terminating at the commencement of said first offset, the length of said first offset being equal to substantially half the gap width and a second offset extending from the upper end of the first offset and terminating at its upper end in means for attachment of a fishing line; whereby when any portion of the fishhook strikes a fish said first offset acts as an eccentric or lever to swivel the fishhook so as to turn the point toward the direction of the striking force on the hook, thereby automatically engaging the point and setting the fishhook to exert maximum hold in the flesh of a fish upon exertion of pull on the fishing line.

4,214,399

ANIMAL TRAP

Ross Bradley, 3929 Porter Ave., Knoxville, Tenn. 37914

Filed Dec. 20, 1978, Ser. No. 970,976
Int. Cl.[2] A01K *69/06*
U.S. Cl. 43—66 **10 Claims**



1. A device for trapping a multiplicity of live animals without terrifying said animals comprising:

a horizontally positioned cylindrical outer housing made of a material capable of withstanding the gnawing of entrapped animals, said housing having at least one opened end and suitable for placing bait therein;

a cover disc suitable for securing to and covering said open end, said cover disc defining an aperture therethrough suitable for the passage of an animal of the type being trapped;

a basket made of a material capable of withstanding the gnawing of entrapped animals, said basket having a multiplicity of perforations which will allow the passage of air and odors therethrough but which perforations are too small for the entrapped animal to pass through, said basket further being securely attached to said cover disc such that said aperture through said cover disc opens to the interior of said basket; and

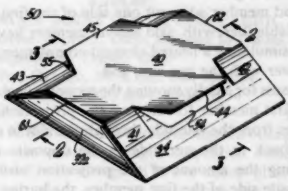
a one-way passage device attached to said cover disc such that an animal lured by the odor of bait passing through said aperture in said cover disc must also pass through said one-way passage device to reach the interior of said basket thereby resulting in the animal being entrapped in said basket and out of reach of bait placed in said outer housing.

4,214,400

INSECT CAPTURING DEVICE

Thomas R. Patmore, Elm Grove, and Daniel J. Boyle, Hartland, both of Wis., assignors to Champion International Corporation, Stamford, Conn.

Filed Nov. 17, 1978, Ser. No. 961,511
Int. Cl.[2] A01M *1/10, 1/14*
U.S. Cl. 43—121 **13 Claims**



1. An insect capturing device of substantially hollow construction comprising:

a base member;

opposed front and back walls each of which extends in-

wardly and upwardly from said base member at substantially an acute angle, each of said front and back walls having an aperture extending from the top portion of the wall to an intermediate portion thereof thus providing said device with a first pair of access apertures to the interior portion thereof;

a pair of opposed side walls each of which extends inwardly and upwardly from said base member at substantially an acute angle relative to said base member, the top edge of each of said side walls being free;

a cover member connecting said front and back walls, said cover member having a width less than that of said base member, said cover member being spaced from said side walls so as to provide said device with a second pair of access apertures to the interior portion thereof, each lateral edge of said cover member extending over a portion of one of said side walls;

two pair of support panels, each pair of support panels being connected to a side wall, each said support panel including a leg portion hingedly connected to a flap portion, with each leg portion of said support panels being hingedly connected to the opposed side edges of the associated side wall, and with the flap portion of said support panel underlying and being adhesively connected to the adjacent surface of one of said front and back walls, said support panels functioning to maintain the respective angles of said associated front, back and side walls relative to said base; and

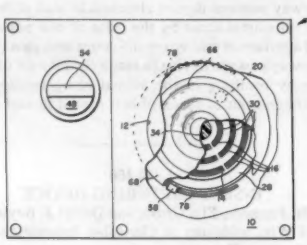
an adhesive substance disposed on the inside surface of the base.

4,214,401

SIMULATED BURNER FOR A TOY COOKING RANGE

Edward C. Teter, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Nov. 24, 1978, Ser. No. 963,501
Int. Cl.[2] A63H *3/52*
U.S. Cl. 46—14 **10 Claims**



1. A simulated burner for a toy cooking range comprising:

a first rotatable member having at least one slot extending therethrough;

a second member adjacent one side of the first member and rotatable therewith, said second member having a projection simulating a heated element complementary to and in register with the one slot; and

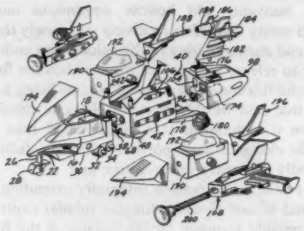
cam means for axially moving the second member relative to the first member for moving the projection varying distances from the one side through the slot in one direction and back to the one side in the opposite direction for varying the amount of the projection visible from the opposite side of the first member, the burner simulating a "no heat" condition when the projection is adjacent the one side of the slot, and simulating gradually increasing and decreasing heat conditions as the projection is gradually moved in the one direction and opposite direction respectively.

4,214,402

TOY ASSEMBLY WITH RECONFIGURABLE PARTS AND REMOVABLE APPENDAGES

Iwakichi Ogawa, Kashiwa, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1978, Ser. No. 950,147
Int. Cl.[3] A63H *33/06, 17/00, 11/10, 33/26*
U.S. Cl. 46—17 **27 Claims**



1. A reconfigurable toy vehicle comprising:

a main body section including a rear body section and having at least one wheel for locomotion, the main body section incorporating an electric motor and at least one electric energy cell providing power for the motor, the motor being operatively connected to the wheel to drive the same, the main body section further incorporating control means for energizing the motor and for selectively causing the wheel to turn in one of a clockwise and counterclockwise direction;

a front body section removably mounted to the main body section, the front body section configured to simulate another vehicle, whereby the front body section when removed from the toy vehicle comprises a second separate toy;

a pair of side body members each having a hollow main section and a removable nose cone mounted thereto, the hollow main section configured to simulate a main body of a boat, the two nose cones being attachable to a front and a rear side of either hollow main section when the same is removed from the toy vehicle, the assembled hollow main section and the two nose cones comprising a separate toy boat, and

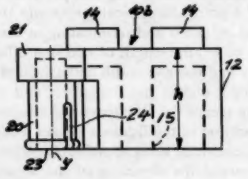
a pair of toy handguns, each handgun being removably attachable to a side of each hollow main section of the side body members to simulate wings for the toy vehicle.

4,214,403

HINGE ELEMENT

Jens N. Knudsen, Billund, Denmark, assignor to Interlego, A.G., Switzerland

Filed Oct. 2, 1978, Ser. No. 947,433
Claims priority, application Denmark, Oct. 13, 1977, 4564/77
Int. Cl.[2] A63H *33/08, 33/04*
U.S. Cl. 46—25 **3 Claims**



1. A hinge element comprising a pair of box-shaped toy

building blocks, each having four side walls and a bottom wall defining an open inner and an outer face, at least one projection extending outwardly from one face of said bottom wall, said blocks having the same height and being hingedly connected along one corner of each block defined by a pair of adjacent side walls, one of said blocks having a tubular bush and the other block having a complementary cylindrical pivot pin, the location of said bush and pivot pin relative to the blocks being such that the pivot pin is rotatably mountable within the bush with the axis of the bush, the axis of the pivot pin and the axis of a corner edge in each block coinciding.

4,214,404

STRUCTURAL ELEMENT OF AN ASSEMBLY KIT

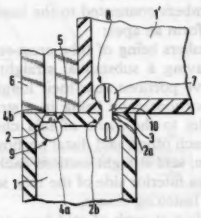
Artur Fischer, Weinhalde 34, D-7244 Waldachtal 3 (Tumlingen), Fed. Rep. of Germany

Filed Aug. 15, 1977, Ser. No. 824,958

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1976, 2636904

Int. Cl.[2] **A63H** *33/10*

U.S. Cl. 46—26 **7 Claims**



1. An assembly kit, comprising a first structural element associated with a first connecting element having a smaller transverse cross section; a second structural element associable with a second connecting element having a greater transverse cross-section; and a hollow third structural element to which said first and second structural elements are detachably connected, said third structural element having at least one undercut groove including a first undercut portion having a smaller transverse cross-section so that said first connecting element can be received in said first undercut portion of said groove to thereby accomplish the aforesaid connection of said first structural element to said third structural element, and a second undercut portion having a greater cross-section so that said second connecting element after detachment of the aforesaid connection of said first structural element to said third structural element can be alternately received in said second undercut portion of the same groove to thereby alternately connect said second structural element to said third structural element, said second undercut portion of said groove being open into the hollow of said third structural element.

4,214,405

FOUR-WAY DOUBLE DOOR FRAME

John M. Chupik, P.O. Box 1008, Temple, Tex. 76501

Filed May 1, 1979, Ser. No. 34,961

Int. Cl.[2] **E05D** *7/02*

U.S. Cl. 49—382 **5 Claims**

1. A four-way double door frame for a pair of doors, one of which is fixed and the other swinging, wherein the swinging door may be either left- or right-handed and may be either in-swinging or out-swinging, comprising:

a head jamb,

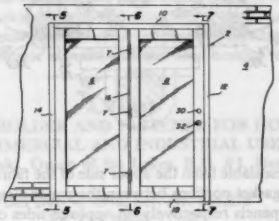
a fixed-door jamb,

a strike jamb for the swinging door,

a sill, and

a center mull, said jambs all having a door-rabbet portion adjacent one longitudinal edge and an unrabbeted portion adjacent the other longitudinal edge,

said center mull having oppositely disposed door-rabbet portions on respectively opposite sides thereof adjacent one longitudinal edge and an unrabbeted portion adjacent



the other longitudinal edge, and a plurality of hinge mortises symmetrically placed along the length of one rabbeted portion, and

joint means at opposite ends of the fixed-door jamb, the strike jamb, and the center mull for joining either end thereof selectively to either the sill or the head jamb.

4,214,406

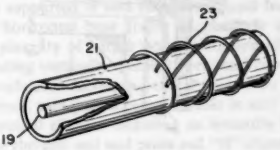
DIMENSIONALLY STABLE SUPPORT STRUCTURE

Alois Wittmann, Palos Verdes, and Ronald J. McGrath, Covina, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 26, 1978, Ser. No. 973,492

Int. Cl.[2] **E04H** *9/00*

U.S. Cl. 52—1 **1 Claim**



1. A dimensionally stable support structure for supporting antennas, optical systems, and the like, comprising:

A first structural material having a predetermined coefficient of thermal expansion;

A second structural material having a negative lesser coefficient of thermal expansion bonded to said first structural material; and

Heat pipe structural means integrally combined with said materials for reducing the temperature gradient through and along said support structure.

4,214,407

WEATHERPROOF JOINT COVER FOR FABRIC ROOFS

Kenneth F. Charter, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

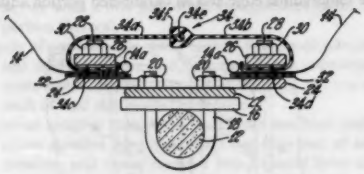
Filed Oct. 16, 1978, Ser. No. 952,024

Int. Cl.[2] **E04G** *11/04;* **E04C** *1/34*

U.S. Cl. 52—63 **8 Claims**

1. In a fabric roof structure wherein elongated clamp mounting base plates are secured along a suspended cable on the upper side thereof, two elongated lower clamp plates are secured respectively along opposite edge portions of each base plate on the upper surface thereof, two elongated upper clamp plates are secured respectively to the lower clamp plates on each base plate, and edge portions of two fabric panels are clamped between the lower and upper clamp plates respectively on opposite sides of the cable, the improvement compris-

ing a weatherproof joint cover between the fabric panels, the joint cover covering the upper sides of the upper clamp plates on opposite sides of the cable from above, being readily open-



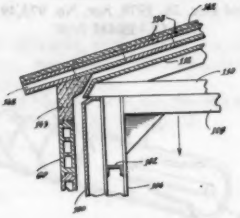
able and resealable from the upper side of the fabric panels, and including gasket portions between the upper clamp plates and the fabric panels respectively on opposite sides of the cable.

4,214,408

MONOLITHIC ROOM ENCLOSING MODULE AND METHOD OF FORMING THE SAME

Frank D. Rich, Jr., Darien, Conn., assignor to F. D. Rich Housing Corp., Stamford, Conn.

Filed May 8, 1978, Ser. No. 903,906
Int. Cl.[2] E04B *2/64*
U.S. Cl. 52—79.1 **20 Claims**



1. The method of forming a monolithic room-enclosing module comprising the steps of

providing a unitary wall-supporting base slab;

dry-stacking a plurality of rows of blocks on said base slab to form the major portions of at least two opposed module walls; and thereafter

pouring a plastic structural material into a first mold adjacent one end of each wall of dry-stacked blocks to form structural posts at least at one end of each module wall of said dry-stacked blocks but not substantially within or between the individual blocks, said structural posts providing lateral support for said dry-stacked blocks;

pouring a plastic structural material into a second mold over the top of each module wall of said dry-stacked blocks to form a structural spandrel beam over each wall of said dry-stacked blocks, the weight of said spandrel beam acting on said dry-stacked blocks therebelow to hold said dry-stacked blocks in close compressive relationship with each other for providing each of said module walls with structural stability;

joining said spandrel beams with a roof spanning said base slab; and

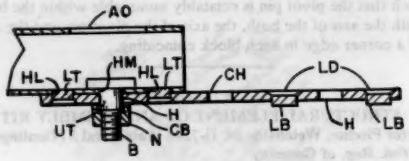
coating at least one face of each of said module walls of dry-stacked blocks with a skin of cementitious material after removal of said first and second molds to provide a continuous surface coating over said at least one face of each of said module walls.

4,214,409

SPACE FRAME CONSTUCTION

Dale H. Gebhardt, and Carl H. LaLonde, both of Warren, Ohio, assignors to Van Huffel Tube Corporation, Warren, Ohio

Filed Oct. 28, 1977, Ser. No. 846,406
Int. Cl.[2] E04H *12/08*
U.S. Cl. 52—127 **4 Claims**



1. A space frame module of generally pentahedron pyramidal configuration comprising:

a generally square base made up of four chord members arranged in a single plane and connected at their extremities to form base corners;

four strut members connected to the base corners and converging to form an apex;

said strut members being of tube cross-sectional configuration and having a substantial straight length and with smooth curve portions near their longitudinal ends with the distal portions each being in a straight section in a plane parallel to the plane of said chord members and parallel to each other, said distal portions being tubular in cross-section; said straight sections each having an access opening in an interior side of the tube section to facilitate handling of fastening means,

a connector plate at each of said base corners and at said apex for connecting said chord members and said strut members to form said module; and

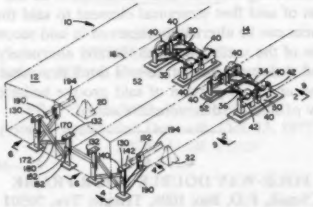
said plate presenting coplanar bearing seats for said chord members on one face of said plate and coplanar bearing seats for said strut members on the opposite face of said plate.

4,214,410

MOBILE HOME EARTHQUAKE SUPPORT

Tommy Mitsueda, 909 S. Toland St., Santa Ana, Calif. 92704

Filed Jun. 28, 1978, Ser. No. 919,912
Int. Cl.[2] E04B *1/343*
U.S. Cl. 52—143 **14 Claims**



1. A mobile home support comprising:

a first plurality of stanchions;

a base member attached to said stanchions for placement on substrata in a manner permitting movement thereof on said substrata;

means on said stanchions for affixing them to the axle of a mobile home;

at least one second stanchion adapted for placement in the forward area of the mobile home;

means for connecting said second stanchion to the bottom of said mobile home;

a plate connected to said second stanchion for said second stanchion to rest upon adapted for movement over the substrata upon which said stanchion is placed;

means on said first stanchions having openings adapted to receive the wheel drum lugs of a mobile home; and,

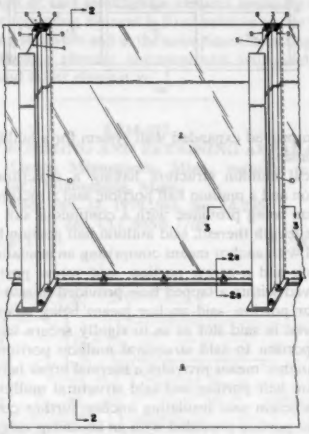
at least one cross bracing member connecting said first stanchions to a point on said axle between the wheeldrums.

4,214,411

PANEL AND JOINT SYSTEM AND TRANSPARENT ACOUSTIC BARRIERS EMPLOYING SAME

William H. Pickett, Framingham, Mass., assignor to The Fanwall Corporation, Framingham, Mass.

Filed Jan. 16, 1978, Ser. No. 869,621
Int. Cl.[2] E04B *1/82*
U.S. Cl. 52—144 16 Claims



1. An outdoor panel system suitable for use as an acoustic barrier along rights of way and bridges, comprising:

a supporting frame which includes a pair of widely spaced-apart posts having a first coefficient of thermal expansion affecting the spacing between posts,

an extended panel of generally rigid material having a coefficient of thermal expansion substantially greater than that of said frame,

said panel sized to span the distance between said posts, the margins of said panel subject to movement relative to the posts, back and forth in the direction of extent of the panel, due to thermal expansion and contraction,

face portions of said panel exposed to variable wind loadings that tend to produce bowing of said panel with corresponding tendency to draw the edges of the panel toward each other,

and a joint means between the panel and the posts, capable of secure retention of the panel despite extreme variations in temperature and wind loading relative to normal values, while permitting the panel to be of economical thickness,

said joint means including, at each edge of the panel corresponding to a post, a load transfer formation of rigid material joined to and extending along the edge of the panel, and protruding to the side of the panel,

a corresponding opposed post surface disposed inwardly along said panel and spaced normally from said load transfer formation,

and a corresponding elastomeric, resilient loadbearing element disposed between said panel transfer formation and said post surface,

said elastomeric and resilient load bearing element having an uncompressed thickness substantially greater than the normal space between said panel load bearing formation and said post surface, whereby at normal condition said elastomeric element is disposed under compression and transfers stress between said post surface and said panel load bearing formation, placing the panel under tension,

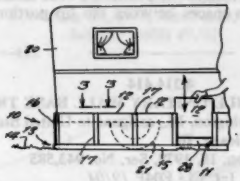
said elastomeric load bearing element thereby serving as a spring element, enabling said panel edges to draw toward each other with further compression of said elastomeric element and enabling said panel edges to move apart with attendant expansion of said elastomeric element, while in each case maintaining continued pressure contact between said elastomeric element and said load bearing formation.

4,214,412

PANEL HOLDER AND FASTENER FOR HOME, COMMERCIAL AND INDUSTRIAL USE

Gary S. Barylski, Queen of the Lakes, R.D. #1, Huron, Ohio 44839

Filed Dec. 4, 1978, Ser. No. 966,275
Int. Cl.[2] B60R *27/00*
U.S. Cl. 52—169.12 1 Claim



1. A panel holder and fastener assembly, comprising, in combination, a stationary framework securable around a peripheral lower edge of a mobile home body or other home, commercial or industrial structure, and a plurality of vertically slidable panels supported in said framework; said framework comprising a horizontal base frame of channels upon the ground and a plurality of corner posts and intermediate "H" channels extending vertically therebetween, said corner posts and "H" channels each having a vertical groove on opposite side edges thereof, said panels being slidable in said grooves; each said horizontal channel including an inwardly lip along one upper edge thereof, and said posts and "H" channels each including sideward protrusions that snap-fit under said lip; upper ends of said posts and "H" channels being supported in brackets secured to said mobile home body; said brackets including a pivotable locking bar for locking under a screw head.

4,214,413

BUILDING STRUCTURE

Emilio Gonzalez Espinosa de Los Monteros, Alamedade Colonnums, Malaga, Spain

Filed Mar. 30, 1979, Ser. No. 25,487
Claims priority, application Spain, Jun. 8, 1978, 470621
Int. Cl.[2] E04H *1/04*
U.S. Cl. 52—236.1 7 Claims

1. A system for constructing a building comprising:

a plurality of vertical columns;

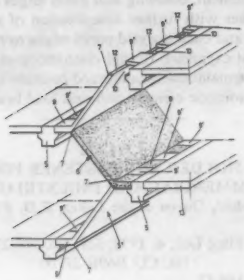
first pairs of horizontal beams supported by the columns at first height intervals;

second pairs of horizontal beams supported by the columns at second height intervals midway between the first height intervals;

horizontal slabs extending between the beams of each pair of beams and supported thereon to form floors and ceilings, and

pairs of adjoining panel members extending obliquely between the first and second pairs of beams to form walls, wherein each panel member has top and bottom ends with horizontally extending lip portions disposed along the

ends with spaces between the lip portions, which lip portions rest upon the beams to support the panel members and which lip portions are alternately spaced on adjoining



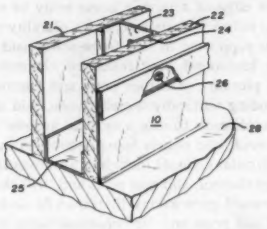
panel members with the lip portions on one member being received in the spaces between the lip portions of the other member.

4,214,414

REMOUNTABLE UNITARY WALL BASE TRIM

Alan C. Wendt, Barrington, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Sep. 18, 1978, Ser. No. 943,585
Int. Cl.[2] E04F *19/04*
U.S. Cl. 52—288 **11 Claims**



1. A remountable unitary extruded plastic base for wall construction providing a decorative finished appearance, said extrusion having a pre-installed generally L-shape comprising:

a first leg having two opposite edges wherein one edge has an inturned stub member disposed at right angles thereto and connecting the leg to a flexible hinge means, and the other edge having a snap engageable lip portion;

a second leg having an upper and lower edge, the upper edge being connected to said flexible hinge means, said second leg being longer than said first leg and having a node member located thereon to provide snap engageability with the lip portion upon rotation of said first leg around said hinge means toward said second leg, and a planar attachment surface along said second leg located between the hinge means and node member adapted to receive fasteners therethrough for securement to a wall; and

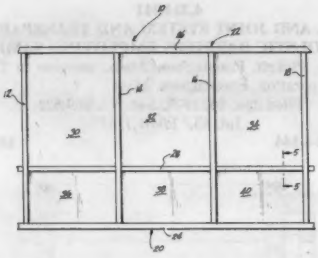
said flexible hinge means comprising a V-shaped notch connecting the inturned stub and upper edge of the second leg, whereby the first leg is rotatable toward the second leg to snap engage the lip portion to said node member, wherein the first leg resides in parallel planar spaced apart relationship with the attachment surface to cover the attachment surface and conceal fasteners within a pocket portion defined therebetween thereby providing a decorative trim appearance.

4,214,415

EXPANDED STORE FRONT SYSTEM

Ronald D. Sukolics, Creve Coeur, Mo., assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Oct. 16, 1978, Ser. No. 951,921
Int. Cl.[2] E04B *2/88, 1/62*
U.S. Cl. 52—395 **33 Claims**



1. An improved expanded wall system for a building or the like comprising:

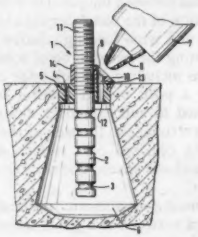
a vertical mullion structure having a structural mullion portion and a mullion half portion, said structural mullion portion being provided with a continuous slot along the entire length thereof, said mullion half portion being provided with anchor means comprising an insulating anchor portion and a screw portion, said screw portion being received within a tapped hole provided in said insulating anchor portion, said anchor means being adapted to be received in said slot so as to rigidly secure said mullion half portion to said structural mullion portion wherein said anchor means provides a thermal break between said mullion half portion and said structural mullion portion and wherein said insulating anchor further comprises a second portion provided with an abutment ridge adapted to mate with a corresponding abutment ridge on said mullion half portion so as to prohibit rotational movement of said insulating anchor portion as said screw portion is screwed into said insulating anchor portion.

4,214,416

ARRANGEMENT FOR ANCHORING A MOUNTING ELEMENT IN A HOLE OF A SUPPORTING STRUCTURE

Artur Fischer, Weinhalde 34, D-7244 Waldachtal 3,(Tumlingen), Fed. Rep. of Germany

Filed Aug. 17, 1978, Ser. No. 934,550
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743301; Nov. 24, 1977, 2752461
Int. Cl.[2] E04B *1/38*
U.S. Cl. 52—704 **20 Claims**



4. An arrangement for anchoring a mounting element in a hole of a supporting structure by a binding material which is supplied into the hole from an outlet end of an injecting device,

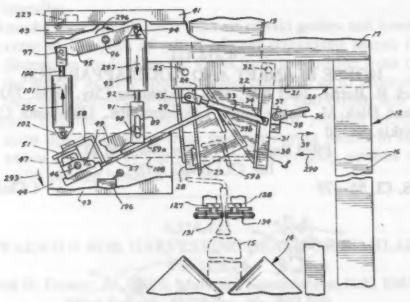
wherein the mounting element has an outer portion projecting outwardly beyond a face of the supporting structure to mount an object to the latter, and an inner portion located in the hole of the structure to be anchored in the latter and bounding with a wall of the structure an inlet opening, the arrangement comprising an insert element located in said inlet opening and closing the latter, said insert element being provided with a filling opening for passing the binding material and with an inner opening for passing the inner portion of the mounting element; and a mouthpiece element on said filling opening, provided with a setting recess located at an acute angle to an axis of the hole of the supporting structure and arranged for receiving the outlet end of the injecting device, said mouthpiece element having a sleeve-shaped portion with a further inner opening for passing the outer portion of the mounting element, so that when the mounting element extends through said inner openings of said insert element and said sleeve-shaped portion of said mouthpiece element inwardly of said elements, the mounting element is fixed relative to the hole of the supporting structure and at the same time the setting recess of the mouthpiece element communicates with said filling opening of said insert element.

4,214,417

BAG TOP FORMING AND RETAINING APPARATUS

Gaylerd M. Lieder, Minneapolis, Minn., assignor to Bemis Company, Inc., Minneapolis, Minn.

Filed Feb. 22, 1979, Ser. No. 14,055
Int. Cl.² B65B *7/06*
U.S. Cl. 53—371 **24 Claims**



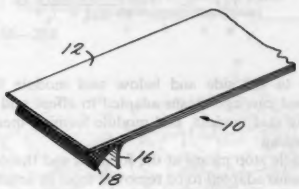
1. Bag top forming and retaining apparatus for a bag having top edges defining a bag mouth, opposite side wall portions, a leading vertical edge and a trailing vertical edge comprising a frame, a transverse pivot member pivotally mounted on the frame for pivotal movement about a transverse axis, a first and a second finger assembly each having a first end portion and a second end portion, first pivot means mounting the first finger assembly first end portion on the pivot member for pivotal movement about a first axis that is about at right angles to the transverse pivot axis, second pivot means mounting the second finger assembly first end portion on the pivot member for pivotal movement about a pivot axis that is substantially parallel to the pivot axis of the first pivot assembly, operable first power means for pivoting the finger assemblies about their pivot axis between an in position and an out position that the finger assembly second end portions are more remote from one another than they are in their in positions, operable second power means for pivoting the pivot member about its pivot axis between a first position that the finger assembly second end portions are at a first elevation and a second position at a higher elevation than the first elevation, a bag top conveyor assembly that includes a first bag top conveyor member and a second bag top conveyor member, means for mounting the bag top conveyor members for movement between a spread apart condition and a together position to conveyingly engage a bag top and operable third power means for moving the conveyor members between their spread apart and together positions, the conveyor members each having first and second end portions and an intermediate portion, the conveyor members in their together position having their intermediate portions adjacent the second finger assembly second end portion when the second finger assembly is in its second out position, and their first end portions more remote from the first finger assembly than their second end portions, and control means for operating the power means to move the conveyor members to their together position after the finger assemblies in their out position have pivoted to their first position about the transverse axis, and after operating the conveyer members power means to move the conveyor members toward their together position, operate the other two power means to move the finger assemblies to their in and second elevation positions and thereafter to their out position.

4,214,418

METHOD OF CONSTRUCTING A THERMAL INSULATION PACKET

Stuart B. Smith, 2069 Christian Cir., Conyers, Ga. 30207

Filed Aug. 28, 1978, Ser. No. 937,133
Int. Cl.² B65B *43/02*
U.S. Cl. 53—452 **5 Claims**



1. A method of constructing an insulation packet comprising the steps of:

(a) adhesively securing together a sheet of metal foil, a sheet of fiberglass fabric and a sheet of paper with the fiberglass fabric located between said sheets of foil and paper to form a composite flexible sheet material, the outwardly facing surface of said paper sheet having a heat-activated adhesive coating thereon,

(b) forming a first tubular section from said composite sheet material with said heat-activated adhesive-coated surface of said sheet material on the interior of said section and with the edges of said composite sheet overlapping each other along the longitudinal axis of said tubular section,

(c) applying heat to the said overlapping edges to activate the adhesive and seal the edges together,

(d) severing the tubular section at a selected point intermediate its ends and generally transverse to its longitudinal axis to form a plurality of smaller tubular sections from said first section,

(e) closing and sealing one end of a said smaller tubular section to form a container,

(f) filling said container with an insulation material, and

(g) closing and sealing the other end of said container.

4,214,419

COLLATING AND SHRINK WRAP PACKAGING APPARATUS

Fred E. Allen, Vineland; Bruce W. Thuener, and Ronald F. Turpin, both of Millville, all of N.J., assignors to Wheaton Industries, Millville, N.J.

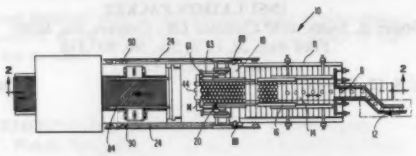
Filed Oct. 2, 1978, Ser. No. 947,394
Int. Cl.² B65B *35/40*
U.S. Cl. 53—543 **30 Claims**

1. Apparatus for collating articles into a module and shrink wrapping in the course of longitudinal movement thereof, said apparatus comprising:

means for mass feeding articles into an article module forming means, said feeding means adapted to interrupt the mass feeding of articles and to remove articles rearwardly of a predetermined module cut-off point;

means for draping under tension a module wrapping film forwardly of said forming means in precise alignment with said module forming means in the direction of travel thereof;

said forming means adapted for slideably transferring a module formed in said forming means forwardly to a wrapping position, said forming means having three-sided contact with said formed module for providing stability to said articles in the course of transferring said module to a wrapping position in the course of said transfer, said draped film being wrapped from the front to the rear of said module along the top and bottom thereof, said module forming means comprises two laterally adjustable side rail members for determining the sides of said module, said side rail members being attached to a carriage means



disposed to the side and below said module forming means, said carriage means adapted to effect said sliding transfer of said module, said module forming means further including

(a) an article stop means at the forward end thereof, said stop means adapted to be removed from its article stopping position during said sliding transfer movement, so as to avoid interference therewith, and

(b) an article pushing means at the rear end thereof, said article pushing means adapted to be removed from its article pushing position during activation of said means for mass feeding articles into said article module forming means so as to avoid interference therewith;

means at said wrapping position for rear and side sealing of said collated article module;

means for shrinking said wrapping film over said collated module; and

conveyor means for transferring said module from said wrapping position through said means for shrinking said wrapping film.

4,214,420

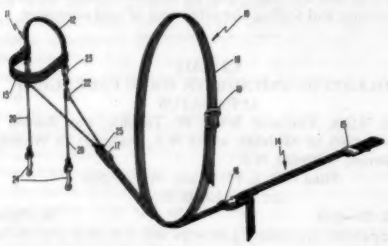
HARNESS DEVICE

Kenneth B. Ferree, 542 W. California St., Ontario, Calif. 91761

Filed May 25, 1977, Ser. No. 800,397

Int. Cl.[2] B68B *1/00*

U.S. Cl. 54—35 **6 Claims**



1. A harness device used in combination with a conventional bridle for effecting head control of a horse, said harness device comprising:

(a) strap means having two ends with a first end thereof being attachable to a saddle means, said strap means being adapted to function in a dual mode whereby it extends forward from the saddle means between the front legs when controlling the upward head movement of a horse and extends along the mane of the horse when controlling the downward head movement of a horse,

(b) a neck strap means connected to the strap means intermediate the ends of the strap means and being effective to encircle the neck of the horse,

(c) a crown assembly effective to fit over the ears of the horse,

(d) said crown assembly including a poll strap extending across the poll area of the head,

(e) pulley means connected to the crown assembly at each end of the poll strap, and

(f) a plurality of control lines adapted for attachment at one end thereof to an end of a bit in the horse's mouth and at the other end thereof to the other end of the strap means,

(g) each said control line extending through a respective one of the pulley means.

4,214,421

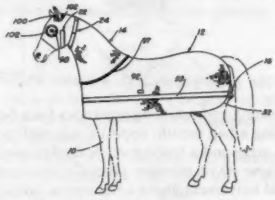
HORSE BLANKET AND HOOD APPARATUS

Dick R. Battle, 2422 NW. 59th, Oklahoma City, Okla. 73112, and Dick M. Battle, 8000 Lakehurst Rd., Oklahoma City, Okla. 93120

Filed Sep. 6, 1977, Ser. No. 830,432

Int. Cl.[3] B68C *5/00*

U.S. Cl. 54—79 **4 Claims**



1. In combination with a horse blanket having an outer surface, an inner surface, a left rear corner portion and a right rear corner portion, the improvement comprising a leg strap closure assembly connected to each of the left rear corner portion and the right rear corner portion, each leg strap closure assembly comprising:

a first strap having a fixed end connected to a portion of the outer surface of the horse blanket, and having a free second end;

a snap shackle connected to the free second end of the first strap;

a second strap having a fixed end connected to a portion of the inner surface of the horse blanket opposite the fixed end of the first strap, and having a free second end, the second strap constructed of an elastic material; and

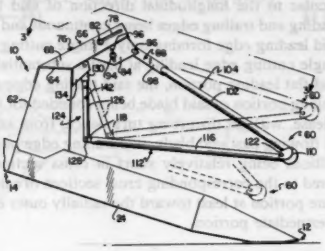
a D-ring connected to the free second end of the second strap, the snap shackle being removably connected to the D-ring with the first and second straps to provide a resilient attachment to each respective rear leg of a horse.

4,214,422

FORAGE HARVESTER WITH ADJUSTABLE CROP GUIDANCE APPARATUS

Kenneth R. McMillen, Canton, Kans., assignor to Hesston Corporation, Hesston, Kans.

Filed Nov. 13, 1978, Ser. No. 959,563
Int. Cl.[2] A01D 45/02
U.S. Cl. 56—119 11 Claims



1. In combination with a crop harvesting header having means for severing rows of standing crops from the ground as the header is advanced across a field and for conveying the severed crop stalks in rearwardly converging streams toward an outlet, guidance apparatus for the stalks above said conveying means comprising:

a pair of rearwardly converging, laterally spaced and fore-and-aft extending guides disposed to gather the stalks laterally;

a knock-down bar adjacent the rear of said guides and transverse to the path of travel of said conveying means in disposition for leaning the stalks back toward the front of the header as they approach said outlet so as to promote butt-first delivery of the stalks through said outlet; and

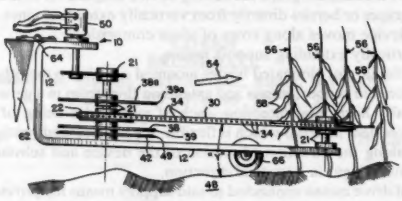
means mounting said knock-down bar for yielding movement upwardly away from said conveying means to the extent required by the volume of converging streams of stalks passing beneath the bar.

4,214,423

APPARATUS FOR HARVESTING BEANS OR SIMILAR CROPS

Alfred H. Dewey, Jr., 292 S. Main St., Canandaigua, N.Y. 14424

Filed Sep. 18, 1978, Ser. No. 943,500
Int. Cl.[2] A01D 45/22
U.S. Cl. 56—130 15 Claims



1. Apparatus for use in harvesting beans and similar crops grown in substantially parallel, spaced apart rows, comprising:

a frame;

at least two pairs of cooperating drive pulleys rotatably mounted on said frame, each of said pairs of pulleys being mounted in tandem and having a front pulley and a rear pulley, said two pairs of drive pulleys arranged in a spaced apart relationship;

separate belts mounted on each of said pairs of drive pulleys and rotatable therewith, said belts being disposed in side-by-side relationship, each separate belt carrying thereon flexible support means for gently engaging and supporting said beans or similar crops from a point proximate the front pulleys to a point proximate the rear pulleys of each of said pairs of cooperating drive pulleys as the harvest-apparatus is moved along the row of crops being harvested;

means for driving said pulleys and thereby said belts at a speed closely approximating the speed at which the harvesting apparatus is being driven over the ground;

cutting means mounted coaxially with each of said rear pulleys of said pairs of pulleys for cutting the tops of the plants having pods thereon from the stalks of said crop being harvested at a preselected location on the stalk; and

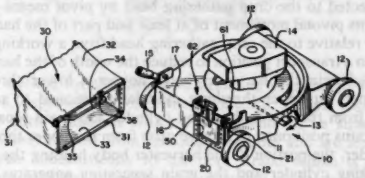
stripper means mounted coaxially with each rear pulley of said pairs of pulleys for engaging the cut stalks of the harvested crop at an appropriate position on the stalk for stripping the cut stalks from the flexible support means to thereby expel the harvested crop.

4,214,424

CATCHER SECUREMENT FOR REAR BAGGER

Donald L. Gobin, Savannah, Ga., assignor to Roper Corporation, Kankakee, Ill.

Filed Jan. 22, 1979, Ser. No. 5,363
Int. Cl.[2] A01D 35/22
U.S. Cl. 56—202 7 Claims



1. In a rotary mower assembly, the combination comprising a mower having an inverted housing containing a rotary blade with means on the housing for driving the blade, the housing having a rear edge and a planar rear surface adjacent thereto having an extensive discharge opening, a substantially flat cover plate dimensioned to cover the opening, hinge means located at the rear edge of the housing for hingeing the cover plate for swinging movement between a vertical closing position and an upraised, substantially horizontal open position, means for biasing the cover plate to its closing position, the plate having a pair of integral arms projecting upwardly adjacent the lateral edges of the plate and presenting operating surfaces substantially in the plane of the plate, a pair of parallel guide plates secured to the top of the housing adjacent the rear edge thereof in vertically extending position, the guide plates being closely spaced alongside of the respective arms, the guide plates having angled but parallel slots formed therein accessible from their rear edges and extending forwardly and downwardly to a bottom portion spaced forwardly of the hinge and substantially at hinge level, a grass catcher having a frame defining a mouth dimensioned to accommodate the cover plate and including a support bar spaced forwardly from the mouth and parallel thereto, the pair of arms having respective notches at their ends, the notches being rearwardly facing when the arms are in vertical position, the notches being complementary to the bottom portions of the respective slots so that when the bar on the catcher is registered with the slots and pressed forwardly therein the bar engages the operating surfaces on the arms for progressively swinging the cover plate into horizontal position until the bar reaches the bottom portions of the slots where it is latched captive between the notches and the respective slots thereby attaching the grass catcher to the mower and holding the cover plate in an open

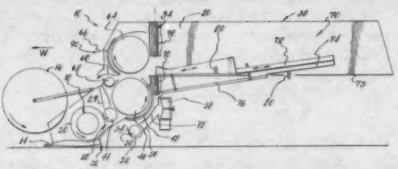
position to create a path for discharge of clippings into the mouth of the bag.

4,214,425

CROP HARVESTERS

Helwig Schmitt, Grebenstein bei Kassel, Fed. Rep. of Germany, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed Jun. 14, 1978, Ser. No. 915,421
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1977, 2727549
Int. Cl.[2] A01D *75/22*; 56 *228*
U.S. Cl. 56—228 **8 Claims**



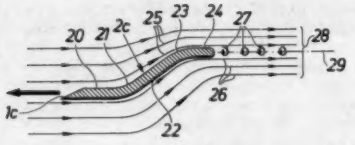
1. A crop harvester comprising a crop gathering head, and a harvester body operatively connected to the crop gathering head, characterized in that at least part of the harvester body is connected to the crop gathering head by pivot means which permits pivotal movement of at least said part of the harvester body relative to the crop gathering head from a working position to a transport position to reduce the width of the harvester and wherein the harvester body houses a lower threshing cylinder, an upper threshing cylinder positioned to receive crop from the lower threshing cylinder and grain separating apparatus positioned to receive crop from the upper threshing cylinder, the portion of the harvester body housing the upper threshing cylinder and the grain separating apparatus being connected to the remainder of the harvester body and to the crop gathering head by said pivot means.

4,214,426

NOISE DAMPING ARRANGEMENT IN ROTATING CUTTING DEVICES

Sture V. Lindblad, Stockholm, Sweden, assignor to Stiga AB, Tranås, Sweden

Filed Jan. 13, 1978, Ser. No. 869,054
Claims priority, application Sweden, Jan. 18, 1977, 7700499
Int. Cl.[2] A01D *55/18*
U.S. Cl. 56—295 **4 Claims**



1. A rotary cutting device, usable in grass mowers and the like of the type having a rotational shaft, comprising a rotary member, which is substantially flat and rigidly secured to said rotational shaft at right angles to the axis of rotation thereof, said rotary member including a plurality of active elements, each active element having the form of an elongated blade substantially rectangular in plan, the longer sides of the blade forming leading and trailing edges of the blade during rotation;

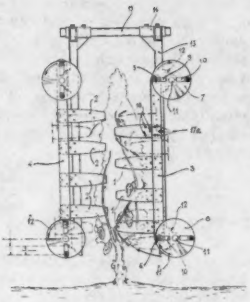
each blade having means for damping noise, said noise damping means comprising a substantially flat leading portion formed along the major outer end part of the leading edge of the blade and a substantially flat trailing portion formed along the opposed major outer end part of the trailing edge of the blade, cross sections of said leading edge flat portion being parallel to and offset below corresponding cross sections of said trailing edge flat portion and being interconnected by an inclined intermediate portion merging by smooth roundings into the respective flat portions, said cross sections being in respective cross-sectional planes parallel to the axis of rotation and perpendicular to the longitudinal direction of said blade, said leading and trailing edges being continuous and unbroken, said leading edge forming only a single cutting edge, said single cutting edge leading at least a substantial length of said flat leading portion, the said trailing edge at said flat trailing portion of said blade being rounded for facilitating release, without disturbing turbulence, from said edge of air flowing past said blade, said trailing edge portion cross sections being relatively short in cross section as compared to the corresponding cross sections of said intermediate portion at least toward the radially outer end of said intermediate portion.

4,214,427

MECHANICAL GRAPE HARVESTING DEVICE

Charles E. Bobard, Beaune; Just M. Dalaunay, Gevrey Chamberlin, and Raymond M. Darcy, Beaune, all of France, assignors to Establissments Bobard Jeune, Beaune, France

Filed Dec. 27, 1976, Ser. No. 754,748
Claims priority, application France, Dec. 29, 1975, 75 39935
Int. Cl.[2] A01D *46/00*
U.S. Cl. 56—330 **29 Claims**



1. A mechanical grape harvesting device adapted for detaching grapes or berries directly from vertically extending vines as the device moves along rows of vines comprising:

vertically extending support means,

a plurality of elongated blades mounted one above the other on said support means and extending therefrom in a generally horizontal direction, each of said blades being of a resilient material which is flexible in a horizontal direction along the direction of motion of the device and substantially rigid in a vertical direction,

and drive means connected to said support means for providing a cyclical vertically reciprocating and horizontally translational motion thereto to move the blades while maintained in a substantially horizontal position in a closed curve path first to penetrate into the vegetation for a distance at least to the vertical medial plane of the vertically extending vines, then in a generally vertical first direction through the vegetation during which the blades contact the grapes or berries and to strip them directly from the vines, then outwardly from the vegetation and then in a generally vertical second direction opposite to said first direction, the horizontal flexibility of the blades permitting them to bend as they contact the vines and

vegetation while the device is normally moving along a row of vines.

4,214,428

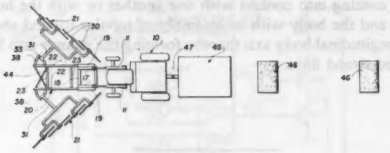
RAKING AND BALING MACHINE

Robert O. Caraway, Hwy. 109, Meansville, Ga. 30256

Filed Oct. 18, 1978, Ser. No. 952,348

Int. Cl.[2] A01D *77/00, 89/00, 87/12*

U.S. Cl. 56—341 **11 Claims**



1. A raking and baling apparatus comprising a tractor, a baler coupled with the rear of the tractor and moving therewith, a power lift means on the front of the tractor including an implement support, a pair of multi-wheel fingerwheel rake assemblies connected with and carried by said implement support with the fingerwheels of each rake assembly disposed generally in a plane which is at an acute angle to the path of movement of the apparatus and with the two planes of the fingerwheels of the two rake assemblies diverging forwardly for the purpose of clearing a wide swath extending on opposite sides of the apparatus and producing a single windrow of material cleared from said swath having a width sufficiently narrow to pass between the wheels of the tractor and be acted on rearwardly of the tractor by said baler during a single pass of the apparatus over a field, and said power lift means on the front of the tractor comprising a front end loader attachment including articulated lift arms, cylinder means to raise and lower the articulated lift arms, and additional cylinder means connected to and moving with said arms, a normally level frame coupled with one pair of said arms near the rear of said frame and coupled with said additional cylinder means near the front of said frame, said implement support comprising an additional frame coupled with the last-named frame and extending forwardly thereof, and said rake assemblies each having a primary support arm pivoted to one side of said additional frame near the front thereof and at an acute angle thereto, the primary support arms diverging rearwardly and being substantially normal to said planes.

4,214,429

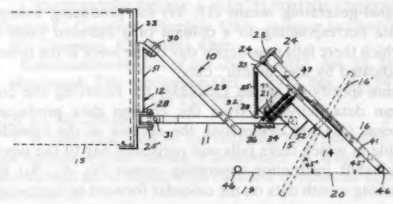
BRUSH RAKE

Frederick R. Ellis, 23 Lakeview Ave., Ripley, N.Y. 14775

Filed Aug. 28, 1978, Ser. No. 937,261

Int. Cl.[2] A01D *77/06*

U.S. Cl. 56—377 **16 Claims**



1. A rake (10) for removing foreign material from rows (19) comprising,

a forwardly extending tongue (11),

attaching means (12) for attaching said tongue to the front end of a tractor (13),

a frame (14),

pivot means (15) swingably attaching said frame to said tongue (11) to swing about a vertical pivot,

a wheel (16) rotatably supported on said frame,

resilient means (21) urging said frame to swing to a position at an acute angle to the direction of travel of said tractor,

tooth means (18) on the periphery of said wheel (16) for engaging the ground to rotate the wheel (16) and rake the foreign material from the rows (20).

4,214,430

METHOD AND APPARATUS FOR THE LAYERWISE SZ-STRANDING OF ELEMENTS TO BE STRANDED ABOUT A FLEXIBLE CORE STRAND

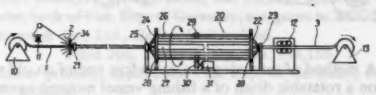
Dieter Vogelsberg, Coburg, and Helmut Pascher, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 25, 1979, Ser. No. 6,797

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1978, 2804480

Int. Cl.[2] H01B *13/02;* **D07B** *3/00*

U.S. Cl. 57—6 **10 Claims**



1. A method for the layerwise stranding of elements to be stranded, especially of elements of electric cables, about a flexible core strand, in which the elements to be stranded continuously run off from stationary supplies and are temporarily run concentrically to the core strand which is held stretched, whereby stranding lays are stored, and in which the elements to be stranded are subsequently guided around the core strand in directions alternating at intervals and in the process are cabled onto the core strand, which is guided in a manner secure against torsion, with a definite length of lay and with alternating direction of lay, comprising, for the purpose of temporary storage of stranding lays, the elements to be stranded

(a) first temporarily cabling the elements to be stranded onto the core strand with a direction of lay alternating at intervals by means of torsioning the core strand;

(b) roping down the elements from the core strand by leading the elements to be stranded around the core strand synchronously with the final stranding; and

(c) then feeding the elements spaced from and parallel to the core strand, which is conducted freely torsionable, or to the stranding axis, respectively, to the final cabling operation.

4,214,431

METHOD AND APPARATUS FOR RIGGING MARINE VESSELS

Wayne M. Bruce, 29 Little River Rd., South Dartmouth, Mass. 02748, and Walter J. Bruce, 109 Oakland St., New Bedford, Mass. 01730

Continuation of Ser. No. 920,125, Jun. 28, 1978, Pat. No. 4,142,353. This application Nov. 7, 1978, Ser. No. 958,450

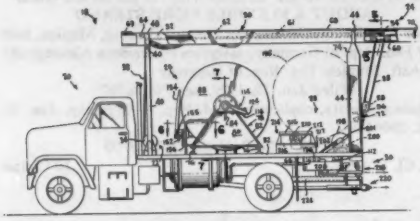
The portion of the term of this patent subsequent to Mar. 6, 1996, has been disclaimed.

Int. Cl.[3] B65H *69/06*

U.S. Cl. 57—22 **13 Claims**

1. A marine rigging apparatus for splicing new wire cable of the type having twisted wire strands to a portion of work wire cable taken from a rotatable drum on a fishing vessel docked or moored adjacent a dock, said apparatus comprising a motor vehicle, a base mounted on said motor vehicle, bearing means

fixedly mounted on said base, shaft means mounted on said bearing means for rotation about the axis of said shaft means, said axis of said shaft means being fixedly positioned with respect to said base, at least one drum rotatably supported by said shaft means, power means operatively connected to said drum for rotating said drum about the axis of the shaft means to wind said worn cable onto said drum, clamping means mounted on said base for restraining portions of cables to be spliced with the cables being restrained against rotation about the axes of the cables, and twister means mounted on said base for rotating a first of said cables in a direction opposed to the natural twist of said first cable to relieve the tension in the strands of said first cable at a desired location on the cable to permit an efficient and quick splicing of a second of said cables to said first cable.



10. A method of removing the worn free end of an old wire cable on a rotatable drum of a fishing vessel moored against a dock and splicing new wire cable to the opposite less-worn end of the old cable, said method comprising the steps of positioning a power driven rotatable reel drum adjacent the vessel, attaching the worn free end of said old cable to said reel drum, rotating said reel drum to effect removal of all of the old cable from the fishing vessel, clamping a portion of the opposite less-worn end of said old cable and the free end of the new cable inwardly of their ends in vise means to restrain the cables, gripping the new cable near the clamped portion of the new cable and rotating the new cable about the axis of the cable in a direction opposed to the natural twist of the cable to provide an untwisted portion of the strands of the new cable, splicing the less worn end of the old cable into the untwisted portion of new cable, terminating the clamping and gripping, and unreeling the combined cable onto the drum of the vessel.

4,214,432

APPARATUS FOR FORMING S-Z TWISTED STRAND UNITS

Gerald A. Scheidt, Dunwoody, Ga., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 21, 1978, Ser. No. 972,105
Int. Cl.[3] H01B *13/04*
U.S. Cl. 57—293 **7 Claims**

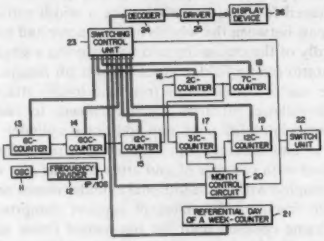
1. Apparatus for forming S-Z twisted strand units comprising a frame; an elongated body mounted to said frame for rotation about a longitudinal body axis and being comprised of an assembly of at least three tubules located radially about said body axis extending side by side longitudinally between opposite body ends; a first strands twisting head rigidly mounted to one end of said elongated body and a second strands twisting head rigidly mounted to the other end of said elongated body with each of said strands twisting heads having a plurality of sheaves each provided with an annular groove; and wherein the sheaves of each twisting head are mounted for rotary movement about mutual parallel axes with each sheave being aligned to receive strands extending linearly through a different one of said tubules with the groove of at least one sheave of each twisting head being partially offset axially from the groove of an adjacent sheave; and means for rotating said elongated body and said first and second strands twisting heads about said longitudinal body axis whereby strand units may be passed a plurality of times through the elongated body by routing the strand units through the body between the first and second twisting heads successively through the tubules without strand units moving in opposite directions through the body coming into contact with one another or with the body ends, and the body with its assembly of tubules rotated about the longitudinal body axis thereby forming the strands into S-Z twisted strand units.

4,214,433

CALENDAR DISPLAY APPARATUS

Hiroyuki Terao, Kodaira, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1978, Ser. No. 889,203
Claims priority, application Japan, Mar. 30, 1977, 52-35690
Int. Cl.[2] G04B *19/24, 19/30*
U.S. Cl. 368—28 **11 Claims**



1. A calendar display apparatus which comprises:

an electronic calendar display panel device (**26**) selectively indicating the 1st to 31st days constituting at least one month, said days being arranged at least in a plurality of columns in conformity to the serial order of the seven days of the week;

a source (**11**) of referential clock pulses;

data signal-generating means (**17, 19**) for producing, according to said referential clock pulses, at least date data and "month" data;

column data producing means (**21**) coupled to said data signal-generating means (**17, 19**) for producing column data corresponding to a column of a calendar table in which there falls a particular day of the week in the month indicated by the "month" data;

column-specifying means (**35*a*-35*g***) for receiving the column data delivered from the column data producing means (**21**) and designating the column of the calendar table in which there falls said particular day of the week;

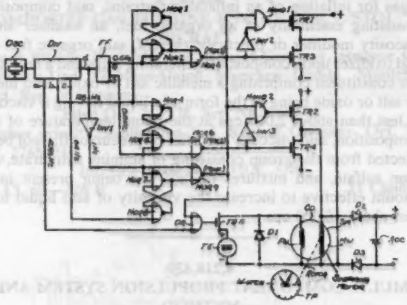
month-shift instruction-generating means (S_2, S_3, S_4) for shifting month data on the calendar forward or backward; and

data-shifting means (**51*a*-51*c*, 49*a*-49*c***) for changing a column data supplied to the column-specifying means (**35*a*-35*g***) from the column data producing means (**21**).

4,214,434
ELECTRONIC WATCHES

Hans-Rudolf Sutter, Pieterlen, Switzerland, assignor to Bulova Watch Company, Inc., Flushing, N.Y.

Filed Dec. 12, 1978, Ser. No. 968,694
Claims priority, application Switzerland, Dec. 16, 1977, 15504/77
Int. Cl.² G04C 3/00
U.S. Cl. 368—71 8 Claims



1. A miniature electronic timepiece having an analog display provided by time-indicating hands, said timepiece comprising:

A. circuit means requiring a direct energizing voltage at a predetermined level and including a high-frequency time base and a multi-stage frequency divider coupled thereto to provide low-frequency timing pulses;

B. a stepping motor operatively coupled to said hands to drive same, said motor including a stator coil wound on a core and an auxiliary coil wound on said core, said auxiliary coil constituting the primary of a transformer whose secondary is said stator coil;

C. a driver stage responsive to said timing pulses to produce drive pulses which are applied to said stator coil to actuate said motor;

D. a d-c voltage source having a voltage output whose level differs from said predetermined level; and

E. a voltage converter coupled to said source to produce an energizing voltage for said circuit means at said predetermined level, said converter incorporating said transformer and further including a pulse-actuated electronic voltage chopper interposed between said d-c source and said primary to supply a periodically-interrupted voltage thereto, thereby producing an alternating voltage at said secondary, a rectifier coupled to said secondary to yield said energizing voltage, and means to inhibit actuation of said chopper when said driver stage produces drive pulses to prevent interaction between the operation of said converter and said driver stage.

4,214,435
METHOD FOR REDUCING NITROUS OXIDE EMISSIONS FROM A GAS TURBINE ENGINE

Thomas C. Campbell, Glendale, Ohio, assignor to General Electric Company, Cincinnati, Ohio

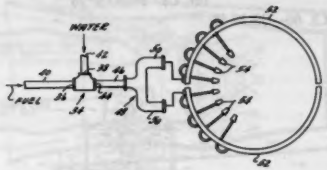
Continuation-in-part of Ser. No. 819,022, Jul. 25, 1977, abandoned. This application Oct. 2, 1978, Ser. No. 947,683
Int. Cl.² F02C 7/00
U.S. Cl. 60—39.05 3 Claims

1. A simplified method for reducing NO_x emissions from a gas turbine engine having a combustor in which a flow of pressurized air is mixed with fuel and combusted comprising the steps of:

(a) providing a flow of fuel under pressure;

(b) providing a flow of water under pressure;

(c) mixing directly, the fuel flow and the water flow in a water:fuel ratio in the range of 0.6 to 1.4 by weight and wherein the conditions are sufficient to produce turbulent mixing with a Reynolds number of at least 1500 in the resulting mixture; and

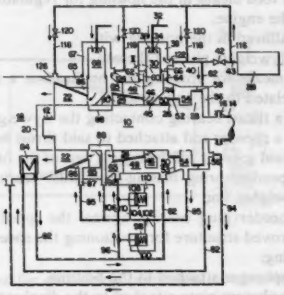


(d) delivering the resulting mixture to a plurality of combustor nozzles for combustion, said combustion occurring within thirty seconds from the time the fuel and water flows are mixed.

4,214,436
THRUST COMPENSATION AND COOLING SYSTEM FOR GAS TURBINES

Norbert Romeyke, Lampertheim, and Richard Kalbfuss, Mannheim, both of Fed. Rep. of Germany, assignors to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland

Filed Jun. 22, 1978, Ser. No. 918,155
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1977, 2728400
Int. Cl.² F02C 7/02, 7/18
U.S. Cl. 60—39.09 R 21 Claims



1. A gas turbine engine, comprising:

a first turbine stage having a first power fluid intake means for supplying a hot power fluid flow through the first turbine stage;

balance piston means for equalizing an axial thrust of the gas turbine engine;

first and second pressurized fluid chambers located adjacent to first and second sides of the balance piston means respectively;

means for introducing a fluid at a first predetermined pressure into the first pressurized fluid chamber;

means for introducing a fluid at a second predetermined pressure into the second pressurized fluid chamber, the second pressure being less than the first pressure;

the first power fluid intake means being adjacent to the first pressurized fluid chamber with the hot power fluid therein at a pressure lower than the pressure of the first pressurized fluid chamber; and

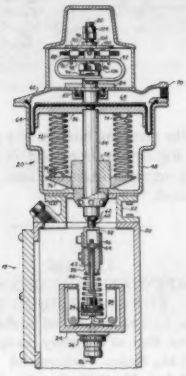
first transfer gasket means for maintaining a pressure difference between the first and second chambers, the gasket means coacting with the balance piston means.

4,214,437

SPEED ADJUST

Richard R. Gillespie, P.O. Box 4675, Odessa, Tex. 79760

Filed Apr. 10, 1978, Ser. No. 895,135
Int. Cl.[3] F02C 9/28
U.S. Cl. 60—39.28 R 2 Claims



1. In a governor for an engine having
a. a housing,
b. fuel feed means in the housing for regulating the fuel fed to the engine,
c. a ballhead in the housing with
(i) flyweights pivoted thereto,
(ii) means for rotating the ballhead at a speed directly related to the engine speed,
(iii) a thrust bearing contacting the flyweights, and
(iv) a speeder rod attached to said thrust bearing,
(v) said speeder rod forming a part of the fuel feed means,
d. a speeder spring biasing the thrust bearing against the flyweights, and
e. a speeder plug bearing against the speeder spring; the improved structure for positioning the speeder plug comprising:
f. a diaphragm attached to the housing,
g. a diaphragm plate attached to the diaphragm, and
h. a diaphragm case forming a fluid chamber on one side of the diaphragm plate,
j. an actuator rod securely attached to the diaphragm plate, on the side of the plate opposite the chamber,
k. the speeder plug securely attached to the actuator rod,
m. so that the speeder plug is directly connected to the diaphragm plate,
n. low speed compression springs bearing against the same side of the diaphragm plate as the actuator rod is attached to,
o. a stud attached to the diaphragm plate and extending through the diaphragm case,
p. a nut on the stud above the diaphragm case,
q. at least one normal speed spring attached to the top of the diaphragm case,
r. a crosshead assembly on top of the spring,
s. space between the top of the crosshead assembly and the nut when the diaphragm is in the position nearest the diaphragm case whereby only the low speed compression spring biases the diaphragm plate until the diaphragm plate moves downward and the nut contacts the crosshead assembly.

4,214,438

PYROTECHNIC COMPOSITION AND METHOD OF INFLATING AN INFLATABLE DEVICE

Brian K. Hamilton; Eugene F. Garner, both of Canyon Country, and Charles Jackson, Newhall, all of Calif., assignors to Allied Chemical Corporation, Morris Township, N.J.

Filed Feb. 3, 1978, Ser. No. 875,052
Int. Cl.[2] C06B 45/10
U.S. Cl. 60—205 11 Claims

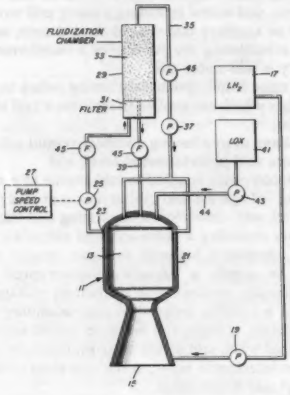
1. A pyrotechnic gas generating composition for generating a gas for inflation of an inflatable restraint, said composition consisting essentially of an organic fuel, an oxidizer and a viscosity modifier or precursor thereof, said organic fuel and said oxidizer upon combustion generating a gas and a non-gaseous constituent comprising a metallic salt or oxide, said metallic salt or oxide being in the form of a liquid having a viscosity of less than about 2,000 cps at the flame temperature of said composition, said viscosity modifier or precursor thereof being selected from the group consisting of alumina trihydrate, calcium sulfate, and mixtures thereof and being present in an amount effective to increase the viscosity of said liquid to at least about 10,000 cps.

4,214,439

MULTI COMPONENT PROPULSION SYSTEM AND METHOD

Joe L. Browning, Indian Head, and Crestus L. Adams, Bryans Road, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 13, 1966, Ser. No. 551,492
Int. Cl.[3] F02K 9/70
U.S. Cl. 60—216 9 Claims



1. In a multi-component propulsion system having a combustion chamber,
means to supply liquid hydrogen from a source of liquid hydrogen,
a fluidization chamber,
metallic particles in said fluidization chamber,
means to allow vaporization of said liquid hydrogen,
means for passing said vaporized hydrogen into said fluidization chamber to thereby activate said metallic particles therein to a fluidized state,
passage means from said fluidization chamber to said combustion chamber to allow a small selected portion of said vaporized hydrogen and a selected portion of said fluidized metallic particles to pass into said combustion chamber,
means to supply a liquid oxidizer to said combustion chamber to allow said liquid oxidizer to be injected into said

combustion chamber to be combusted with said metallic particles, and

a supply line from said fluidization chamber to said combustion chamber to recover a major portion of said vaporized hydrogen and to pass said recovered vaporized hydrogen into said combustion chamber to allow said vaporized hydrogen to mix with the products of combustion of said liquid oxidizer and said metallic particles.

4,214,440

COMPOSITE GAS TURBINE ENGINE FOR V/STOL AIRCRAFT

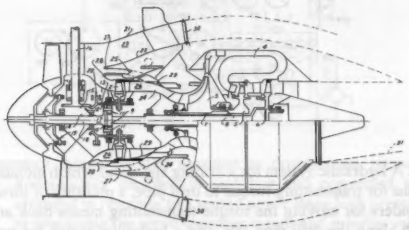
Gerhard Rücker, Karlsfeld, Fed. Rep. of Germany, assignor to Moteren-Und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 2, 1978, Ser. No. 947,690

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1977, 2745131

Int. Cl.[2] F02K *3/04*; F02C *3/06*

U.S. Cl. 60—226 B **11 Claims**



1. A composite gas turbine engine for V/STOL aircraft, comprising:

a fan,

a lift device,

a compressor,

a turbine,

two annular ducts arranged one within the other, the inner duct leading air from the fan to the compressor and turbine, and the outer duct leading air from the fan so that it bypasses the compressor and turbine,

a supercharger between the fan and compressor, the supercharger being within the inner duct,

a drive shaft rotated by the turbine, and

means for alternatively coupling the drive shaft either to the fan or to the supercharger and lift device.

4,214,441

INFRARED SUPPRESSOR DEVICE

Thorvald E. Mouritsen, and William E. Simpkin, both of Dallas, Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 12, 1978, Ser. No. 941,702

Int. Cl.[3] F02K *3/04*; B64D *33/04*

U.S. Cl. 60—262 **7 Claims**

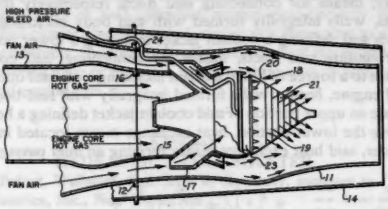
1. An infrared suppressor for the exhaust of an infrared radiation source comprising,

a tailpipe for receiving hot exhaust gases from said infrared radiation source and low temperature fan air,

a contoured plug fitted within said tailpipe and positioned to have said hot gases flow over the surface thereof, said contoured plug being sufficiently large to prevent direct viewing of said infrared radiation source,

an annular vortex cavity on said contoured plug for reenergizing the boundary layer built up along the surface of said contoured plug for maintaining flow of said hot exhaust gases in contact with said contoured plug,

means for supplying high pressure bleed air to said vortex cavity, and



means for diverting a portion of said low temperature fan air inside said contoured plug.

4,214,442

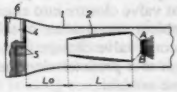
COMBUSTION CHAMBERS OPERATING ON A SUPERSONIC STREAM CHIEFLY FOR JET ENGINES

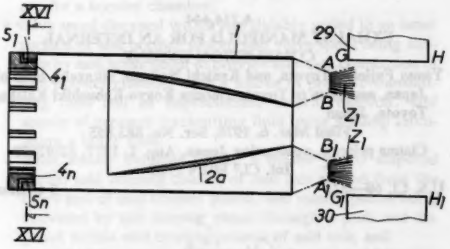
Lucien Reingold, Paris, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Aug. 8, 1968, Ser. No. 752,451

Int. Cl.[3] F02K *7/10*

U.S. Cl. 60—270 R **15 Claims**





1. A method for producing permanent combustion under substantially detonating conditions, comprising the steps of subdividing a stream of combustion-sustaining fluid flowing at supersonic speed into two parallel streams; modifying the speed of at least one of said parallel streams to make the latter flow at different speeds over predetermined paths; injecting fuel into the stream flowing at the higher speed; and constraining the parallel streams flowing at different speeds to mix at the downstream end of said paths to thereby produce a system of shock waves bounded by a surface converging first in the direction of flow and diverging thereafter and having thus a transverse cross-section of minimum area, so as to cause the combustion to start in the vicinity of said transverse cross-section of minimum area.

4,214,443

MARINE ENGINE MANIFOLD

Frederik J. Herenius, Peterborough, England, assignor to Perkins Engines Limited, Peterborough, England

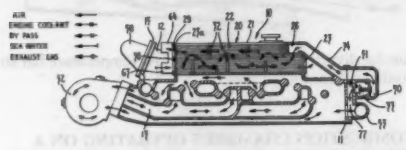
Division of Ser. No. 783,353, Mar. 31, 1977. This application Sep. 1, 1978, Ser. No. 939,014

Int. Cl.[2] F01N *7/06*

U.S. Cl. 60—321 **5 Claims**

1. A manifold comprising a body connectible to exhaust and

induction parts of an internal combustion engine, an induction manifold and an exhaust manifold respectively comprising an induction duct and an exhaust duct formed integrally with said body, means for connecting said ducts respectively to said parts, walls integrally formed with said body enclosing said ducts and defining a coolant jacket including a lower portion surrounding said ducts, means for connecting said coolant jacket to a source of liquid coolant including a coolant outlet of said engine, header walls formed integrally with said body to create an upper portion of said coolant jacket defining a header above the lower portion, heat exchange means located in said header, said heat exchange means forming an inlet passage for



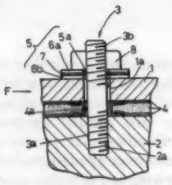
engine coolant flowing from said source, and a double acting thermostatically controlled valve operable in response to the temperature of said engine coolant, said valve including a first valve seat and a first valve closure controlling access of said engine coolant to said heat exchanger and a second valve seat and a second valve closure controlling access of said engine coolant to a duct for returning said engine coolant to said engine, and means responsive to said engine coolant temperature to move said first valve closure into engagement with said first valve seat at ambient temperature of said engine coolant, and to move said second valve closure into engagement with said second valve seat at a predetermined temperature above ambient of said engine coolant.

4,214,444

EXHAUST MANIFOLD FOR AN INTERNAL COMBUSTION ENGINE

Yasuo Fujioka, Toyota, and Kenichi Nakano, Okazaki, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 6, 1978, Ser. No. 883,865
Claims priority, application Japan, Aug. 1, 1977, 52-92820
Int. Cl.[2] F01N *7/00*
U.S. Cl. 60—322 **6 Claims**



1. In an internal combustion engine for an automobile having a cylinder head, an exhaust manifold having a flange, and a gasket sandwiched between the flange and the cylinder, the improvement comprising:

a bolt, one end of which is screwed into said cylinder head, said bolt extending through said flange and said gasket;

means, on the other end of said bolt, for tightening the flange, the gasket and the cylinder head together;

a washer assembly sandwiched between said tightening means and said flange, said assembly comprising at least two flat ring-shaped metallic washers and a flat ring-shaped low frictional member between and in contact with the metallic washers; and

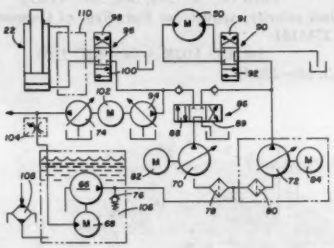
said assembly, said flange, and said gasket each having a fitting hole defined therethrough through which the bolt extends, each of said fitting holes being of larger transverse cross-sectional area than the bolt to define an annular clearance between the bolt and each of the assembly, the flange and the gasket to prevent the exhaust manifold from contacting the bolt even when the exhaust manifold thermally expands.

4,214,445

HYDRAULIC CIRCUITRY FOR RAISE DRILL APPARATUS

Jack O. Winsor, Seattle, and Neville Thompson, Federal Way, both of Wash., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed May 14, 1979, Ser. No. 38,955
Int. Cl.[2] F15B *11/16, 13/09*
U.S. Cl. 60—486 **7 Claims**



1. A hydraulic system for a drilling apparatus which includes means for transmitting torque to drill pipe, a plurality of thrust cylinders for moving the torque transmitting means back and forth along the drill pipe axis, and a hydraulic motor for supplying torque to the torque transmitting apparatus, comprising:

(a) a first drive pump connected to the motor and thrust cylinders;

(b) a first valve between the first drive pump and motor for selectively controlling the direction of fluid flowing to the motor;

(c) a second valve between the first drive pump, on one side, and the thrust cylinders and motor, on the other side, for selectively diverting fluid flow from the first pump either to the thrust cylinders or the motor;

(d) a second pump for supplying fluid to the thrust cylinders;

(e) a third valve connected between the first and second pumps, on one side, and the thrust cylinders, on the other side, for selectively controlling the direction of fluid flowing to the thrust cylinders;

(f) a charge pump connected to the inlet of the first drive pump for supplying fluid thereto at a positive pressure for overcoming pressure losses in the system.

4,214,446

PRESSURE-FLOW COMPENSATED HYDRAULIC PRIORITY SYSTEM PROVIDING SIGNALS CONTROLLING PRIORITY VALVE

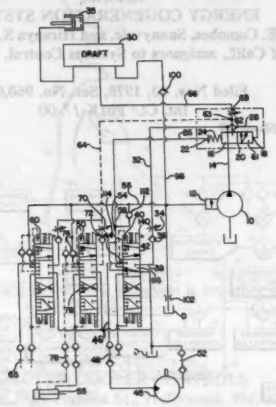
Leonard A. Bettin, Lyons, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Jan. 22, 1979, Ser. No. 5,048
Int. Cl.[2] F15B *11/16*
U.S. Cl. 60—420 **9 Claims**

1. For use in a pressure-flow compensated circuit path in combination with a restricted orifice (**34**) providing downstream pressure in a flow supply line included in said path and leading from the restricted orifice to a downstream priority load (**45,45*a***):

a priority valve (**20**) upstream in said path provided with opposing servo chamber means for sensing the pressure drop across the posterior restricted orifice, and servo positioned thereby in an activated position for cutting off

an auxiliary flow to an auxiliary motor load (35,55,65,65*a*) and continuing to supply the restricted orifice and line therefrom to the priority load when the downstream pressure is at a lower stage high pressure, and alternatively for being deactivated and opening the auxiliary flow to the auxiliary motor load whenever pressure to the opposing servo chamber means is deactivated; and



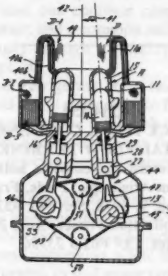
control means (40,40*a*) sensitive to downstream pressure hydraulically disposed in said line and connected and arranged in response to a sensed upper stage high pressure to deactivate the servo chamber means and priority valve by disconnecting the opposing servo chamber means from the downstream pressure and venting the opposing servo chamber means by reconnecting same to drain.

4,214,447

DUAL-CRANK STIRLING ENGINE WITH QUAD CYLINDER ARRANGEMENT

David W. Barton, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 17, 1978, Ser. No. 906,812
Int. Cl.² F02G *1/04*
U.S. Cl. 60—525 **5 Claims**



1. In a Stirling engine having a reciprocating apparatus consisting of a crankcase, a plurality of cylinders adjacent said crankcase, double-acting pistons in each of said cylinders, each piston having a piston rod extending into said crankcase, a crankshaft means within said crankcase, crank arm means drivingly connecting each of said piston rods with said crankshaft means, thermodynamic cycling means for said pistons, the improvement comprising:

(a) said crankshaft means having at least one pair of spaced parallel arranged crankshafts,

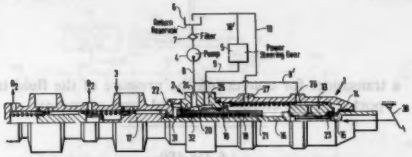
(b) said cylinders being four in number and having the upper extremities of said cylinders spaced equi-distantly in a quad-cluster about a central engine axis transverse to said crankshafts, the longitudinal extent of all of the cylinders forming zero or negative angles with respect to said central engine axis.

4,214,448

HYDRAULIC BRAKE BOOSTER

Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jun. 19, 1978, Ser. No. 916,632
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1977, 2734471
Int. Cl.² B60T *13/00*
U.S. Cl. 60—547 R **7 Claims**



1. A hydraulic brake booster comprising:

a housing having a longitudinal axis;

a booster piston disposed in and slidably sealed to an inner surface of said housing coaxial of said axis, one end of said booster piston adjacent a brake pedal providing a boundary for a booster chamber;

a valve spool disposed within and slidably sealed to an inner surface of said booster piston, said valve spool being slidable by said brake pedal to provide alternate connection of said booster chamber with a source of pressure-transmitting fluid and an unpressurized return reservoir, said source of pressure-transmitting fluid being a pump circulating a brake fluid;

a static master cylinder having a master piston disposed within said housing coaxial of said axis spaced from the other end of said booster piston, said master piston being activated by said booster piston through a push rod disposed within said housing coaxial of said axis; and

a controlled flow-control valve disposed within said housing coaxial of said axis between said booster piston and said master cylinder, said flow control valve including

a valve member disposed within said housing and coaxially around said push rod, said push rod causing said valve member to be displaced mechanically in a direction towards said master piston to obtain throttling of said pump-circulated fluid.

4,214,449

THERMAL ENERGY CONVERSION SYSTEM UTILIZING EXPANDITES

Jens O. Sorensen, P.O. Box 2274, Rancho Santa Fe, Calif. 92067

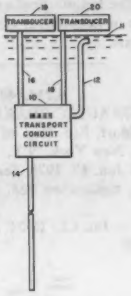
Filed Apr. 2, 1979, Ser. No. 25,800
Int. Cl.² F03G *7/00*
U.S. Cl. 60—641 **46 Claims**

1. A thermal energy conversion system, comprising:

a mass of expandites that change density in response to changes in temperature at a given pressure to thereby change buoyancy with respect to a surrounding fluid;

a mass transport conduit circuit for introducing the expandites to a surrounding fluid at different combinations of temperature and pressure and transporting the expandites and the surrounding fluid in response to pressure differen-

tials created by density changes of the expandites and concomitant buoyancy changes of the expandites as the expandites are exposed to the surrounding fluid at different combinations of pressure and temperature; and



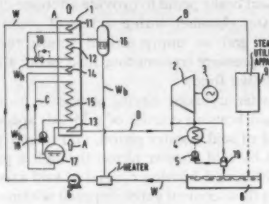
a transducer for converting the pressure of the fluid transported by the circuit to a useful form of energy.

4,214,450

APPARATUS FOR RECOVERING HEAT FROM EXHAUST GASES OF MARINE PRIME MOVERS

Kiyoshi Nagashima, Yokohama, and Tsugutoshi Yamada, Kashiwa, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 14, 1978, Ser. No. 886,583
Claims priority, application Japan, Apr. 19, 1977, 52-45032
Int. Cl.[2] F01K *17/00*
U.S. Cl. 60—648 **3 Claims**



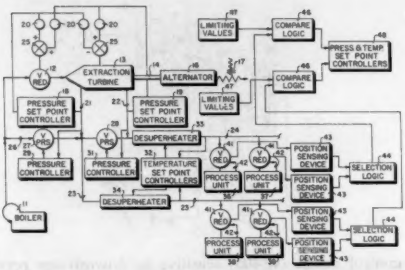
1. Apparatus for recovering heat from the exhaust gases of marine prime movers comprising a feed water line; an exhaust gas economizer for effecting heat exchange between the exhaust gases discharged from the prime mover and feed water supplied from a feed water tank; said exhaust gas economizer having a high pressure steam generator section for receiving high pressure feed water and generating high pressure steam for use in driving a steam turbine, and a low pressure steam generator section for receiving low pressure feed water for generating general purpose steam for use for purposes other than driving said steam turbine; a pressure regulator device connected between said feed water line and said low and high pressure steam generator sections for regulating the pressure of said feed water to provide relatively low pressure and high pressure feed water to the respective steam generator sections; a low pressure steam separator device connected at the outlet of said low pressure steam generator section for separating water from said general purpose steam; and a primary feed water preheater in said feed water line and connected to said low pressure steam separator device for mixing the water separated from said general purpose steam by said low pressure steam separator device and the feed water supplied to said exhaust gas economizer and thereby preheating said feed water.

4,214,451

ENERGY COGENERATION SYSTEM

Graham E. Coombes, Sunnyvale, and Hiranya S. Rao, Palo Alto, both of Calif., assignors to Systems Control, Inc., Palo Alto, Calif.

Filed Nov. 13, 1978, Ser. No. 960,063
Int. Cl.[2] F01K *17/00*
U.S. Cl. 60—648 **13 Claims**



1. A method of controlling an energy cogeneration system which includes means to convert the heat energy contained in steam to mechanical energy, a header for distributing steam under pressure to at least one processing means having a need which varies over time for steam, and a steam supply means common to both said conversion means and said header, comprising the steps of:

monitoring over a period of time the requirements of said processing means for steam distributed by said header; and

changing in response to said monitoring means indicating that said processing means needs at any given time a different amount of steam than that represented by the steam pressure delivered to said header, the pressure so delivered to said header to a pressure which more closely corresponds to that steam pressure which is so needed.

4,214,452

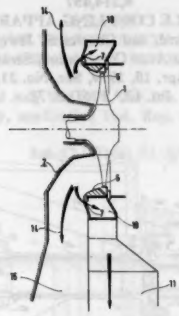
EXHAUST DEVICE FOR A CONDENSABLE-FLUID AXIAL-FLOW TURBINE

Gilbert Riollet, and Gerard Franconville, both of Paris, France, assignors to Alsthom-Atlantique, Paris, France

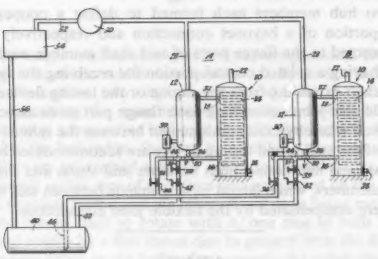
Filed Aug. 9, 1978, Ser. No. 932,383
Claims priority, application France, Aug. 25, 1977, 77 25939
Int. Cl.[2] F01D *25/30*
U.S. Cl. 60—697 **9 Claims**

1. An exhaust device for a condensable-fluid axial-flow turbine leading to a multi-zone condenser, said exhaust device comprising an annular diffuser with an axial input open to the output of the last stage of the turbine and a substantially radial output leading to the condenser which is divided into two zones in one of which the pressure is lower than in the other, the radially outer wall of the diffuser with respect to the input flow into the duct having a circumferential suction slot which connects to the lower pressure port of the condenser to remove a fraction of the flow in the diffuser towards the lower-

pressure part of the condenser and said radially outer wall further having a shape such that the pressure gradient measured at its surface in the flow direction is negative or zero at all points.



4,214,453
INJECTOR COOLER CONTROLS
Billy E. Barrow, 2434 Funston St., Hollywood, Fla. 33020
Filed Feb. 9, 1979, Ser. No. 10,804
Int. Cl.[3] F25D *17/02*
U.S. Cl. 62—118 **4 Claims**



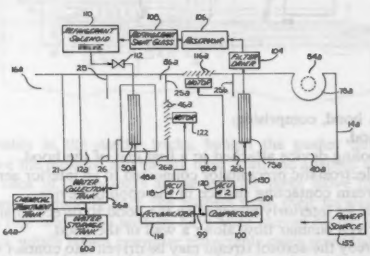
4. A method for using a single low side critical refrigeration loop including at least one common compressor, a common evaporative condensor, and a common receiver, to flow refrigeration simultaneously through a plurality of injector coolers, comprising the steps of:

discharging liquid refrigerant from said common receiver and causing said liquid refrigerant to flow through a liquid refrigerant line associated with each cooler to said cooler, each associated liquid refrigerant line having a control valve and an injector nozzle connected to one of said coolers,

extracting liquid refrigerant by venturi action from a surge tank means for injection into said cooler when refrigerant from said receiver flows through said injector nozzle, said liquid refrigerant vaporizing while flowing through said cooler and returning to said surge tank, whereby refrigerant vapor flows to said compressor while liquid refrigerant is drawn out said injector nozzle,

discharging vaporized refrigerant from said common receiver through a vapor refrigeration line having a control valve upon receipt of a high liquid level signal from said surge tank to said control valve in said vapor refrigeration line, said vapor refrigeration line, said vapor refrigeration line connected from said common receiver to said liquid refrigeration line upstream of said injector nozzle, said liquid refrigerant line control valve securing flow therethrough while a high liquid level signal is present in said surge tank.

4,214,454
WATER RECOVERY SYSTEM
James C. Taylor, #8 Tribute Ct., Newport Beach, Calif. 92663
Filed Feb. 1, 1978, Ser. No. 874,234
Int. Cl.[2] F25B *29/00*
U.S. Cl. 62—173 **12 Claims**



1. An apparatus for removing water vapor from the atmosphere and converting it into liquid water, comprising:

precipitating chamber means having an input opening, through which air may enter the precipitating chamber means and an output opening through which air may leave the precipitating chamber means;

heat transfer means including a fluid stream in a refrigeration circuit having an energy absorbing element located in the precipitating chamber means and an energy discharging element located outside the precipitating chamber means for conveying heat energy from the energy absorbing element to the energy discharging element;

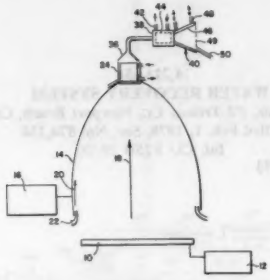
mixing chamber means having an intake opening connected to the output opening of the precipitating chamber means through which air may enter the mixing chamber means from the precipitating chamber means and an exhaust opening through which air may leave the mixing chamber means, the exhaust opening being located with respect to the energy discharging element so that the air passing through the exhaust opening is directed toward the energy discharging element and including an air vent opening for allowing atmospheric air to enter the mixing chamber without having to enter the input opening of the precipitating chamber means;

outside air louvre means located in the vicinity of the air vent opening for regulating the volume of air capable of entering the air vent opening;

coil louvre means located between the precipitating chamber means and mixing chamber means for regulating the volume of air passing through the output opening of the precipitating chamber means; and

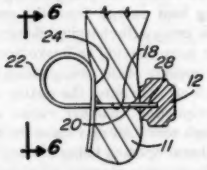
command means operably connected to said heat transfer means and also operably connected to both of said louvre means for sensing a condition in the fluid stream of the refrigeration circuit and for controlling the opening and closing of both of said louvre means in response to changes in the condition in the fluid stream to thereby regulate the airflow through said louvre means.

4,214,455
HOOD WITH A COOLING DEVICE AND A PRECIPITATOR
Stephen Wyden, 16 Court St., Brooklyn, N.Y. 11241
Filed May 8, 1978, Ser. No. 904,039
Int. Cl.[2] F25B *33/00*
U.S. Cl. 62—467 R 5 Claims



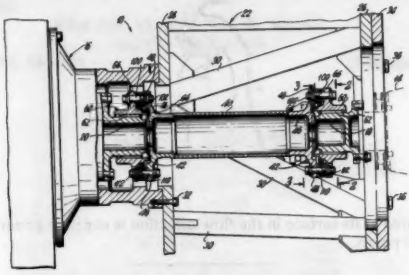
1. A hood, comprising:
a hood,
a cooling device attached to a first end of the hood,
an electrostatic precipitator connected to an interior aerosol stream contacting surface in the cooling device,
an air jet interiorly attached to the hood to direct an air jet driven laminar flow along a wall of the hood,
whereby the aerosol stream may be driven into contact with the electrostatic precipitator surface with minimal hood contamination.

4,214,456
EARRING WITH UNITARY FASTENER
Evelyn J. Hannum, 3880 S. Hillcrest, Denver, Colo. 80237
Filed Aug. 4, 1978, Ser. No. 930,892
Int. Cl.[2] A44C *7/00*
U.S. Cl. 63—12 16 Claims



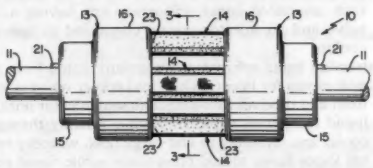
14. An earring for an ear with a lobe having a pierced opening therethrough, said earring comprising:
an ornament;
a one-piece fastener for securing said ornament to said ear lobe, said fastener having a substantially straight shank portion attached at one end to said ornament and extending away from said ornament, a generally arcuately shaped, spring clip-like, intermediate portion formed continuously with said shank portion and looped away from and then back toward said shank portion through an angle of approximately 270°, and an ear contact portion formed continuously with said spring clip portion and extending therefrom along an axis substantially perpendicular to, intersecting and continuing beyond said shank portion and disposed generally opposite and parallel to a back surface of said ornament and spaced away from said back surface a distance less than the thickness of the ear whereby said shank portion may be placed through the pierced opening with the ear lobe compressed between said ear contact portion and said back surface under spring pressure from said intermediate portion.

4,214,457
FLEXIBLE COUPLING APPARATUS
James Wade, Stratford, and Charles S. Jewett, Lyme, both of Conn., assignors to Avco Corporation, Stratford, Conn.
Filed Apr. 18, 1979, Ser. No. 31,047
Int. Cl.[3] F16D *3/78*
U.S. Cl. 64—4 12 Claims



1. Flexible coupling apparatus for interconnecting a splined shaft extending from an engine and a splined shaft extending from a testing device comprising:
a shaft member having flange parts on opposite ends thereof, each flange being formed to define one portion of a bayonet connection;
two hub members each formed to define a cooperating portion of a bayonet connection and respectively connected to the flange parts of said shaft member, each hub having a splined central portion for receiving the splined shaft extending from the engine or the testing device; and
a flexible joint connecting each flange part to its associated hub whereby axial misalignment between the splined shaft of the engine and testing device are accommodated by the splined interconnections between said shafts and the hub members, while lateral misalignments between said shafts are compensated by the flexible joint connections.

4,214,458
FLEXIBLE COUPLING AND METHOD OF MAKING SAME
Robert C. Philleo, Centerville, Ohio, assignor to Dayco Corporation, Dayton, Ohio
Filed Dec. 11, 1978, Ser. No. 968,540
Int. Cl.[3] F16D *3/64*
U.S. Cl. 64—11 R 14 Claims



1. In a flexible coupling for transmitting rotary power comprising opposed end structures and flexible coupling members disposed between said end structures the improvement wherein said coupling members consist solely of a plurality of rectilinear members having opposite end positions thereof supported by said end structures, said rectilinear members being defined primarily of polymeric material, said rectilinear members being substantially identical and comprising prede-

termined belt lengths of power transmission belt structure, and each of said belt lengths having a uniform cross-sectional configuration throughout its length.

4,214,459

TORQUE TRANSMISSION CLUTCH

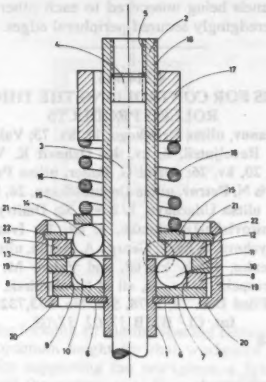
Kajetan Leitner, Am Winacker 18, 8170 Bad Tölz, Fed. Rep. of Germany

Filed Aug. 23, 1978, Ser. No. 935,950

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 2739489

Int. Cl.³ F16D *43/20*

U.S. Cl. 64—29 **7 Claims**



1. A torque transmission clutch comprising coaxial driving and driven shafts which are located axially and which are generally hollow, two rings of equal-sized balls, each ring of balls containing the same number of balls and being held in apertures in a respective ball-retaining disc having a thickness equal to the ball radius, the discs being alike, a sleeve in which the discs are maintained apart by spacer means a distance equal to the ball radius, one of said discs being mounted on the drive shaft to rotate with it and the other of said discs being mounted on the driven shaft to rotate with it, one ring of balls being located axially by a first thrust disc to project from the disc by a distance equal to the ball radius towards the other disc, the other ring of balls being spring urged through a second thrust disc to project from its respective disc to interengage between the balls of the said one ring and, an aligning member extending co-axially into said driving and driven shafts and being secured to one of said shafts.

4,214,460

FLAT KNITTING MACHINE

Masahiro Shima, Wakayama, Japan, assignor to Shima Idea Center Co., Ltd., Wakayama, Japan

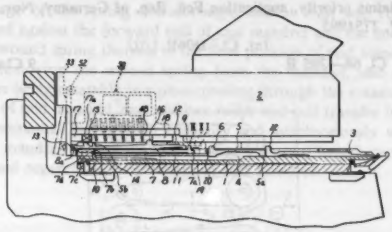
Filed Nov. 2, 1978, Ser. No. 957,171

Claims priority, application Japan, Nov. 8, 1977, 52-134484

Int. Cl.² D04B *7/00, 15/66*

U.S. Cl. 66—75.2 **10 Claims**

1. A flat knitting machine having needle jacks which are longitudinally movably disposed in the needle tricks, behind needles, the butts of said needle jacks being depressible into the tricked needle bed, wherein the improvement comprises: selector jacks disposed in the needle tricks, behind and at a higher level than the needle jacks and adapted to be selectively moved back and forth by electromechanical needle selector means on the carriage, means acting on said needle jacks to depress the butts thereof into the needle tricks, which means comprise pushers provided longitudinally movably in the needle tricks, behind the butts of the needle jacks and between the needle jacks and the selector jacks, each of said pushers having its front portion disposed pivotally movably in the needle trick and having a butt on the top of said front portion thereof and a surface adapted to depress the needle jack at the underside of said front portion, means acting on the pushers to depress, through the pushers, the butts of the needle jacks into the needle bed, which means comprise retractable pusher cams provided on the carriage to exert depressing force upon the top of said pusher butts, means for moving forward the pushers from their rearward position to their forward position, which means comprise said selector jacks disposed longitudinally



movably in the needle tricks, behind the pusher butts and above the pushers, and having their front end adapted to strike the back of the pushers as the selector jacks move forward, means for moving back the pushers from their forward position into which the pushers have been moved by the selector jacks, which means comprise retractable cams provided on the carriage, said retractable cams including pusher restoring cams adapted to move the pushers back from their forward position to their rearward position and pusher half-restoring cams adapted to move back the pushers from said forward position to intermediate position.

4,214,461

DEVICE FOR WET TREATING, ESPECIALLY DYEING AND IMPREGNATING, TEXTILE WEBS IN A CONTINUOUS MANNER

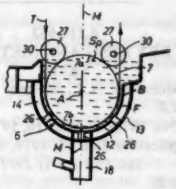
Günter Schiffer, Krefeld; Klaus Meisen, Tönisvorst; Rudolf Sunnen, and Klaus Heidan, both of Krefeld, all of Fed. Rep. of Germany, assignors to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Nov. 21, 1978, Ser. No. 962,626

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1977, 2752011

Int. Cl.² D06B *3/22*

U.S. Cl. 68—158 **8 Claims**



1. A device for wet treating, especially dyeing and impregnating, a textile web, which includes in combination: a vat having a lower section and a bottom to receive and contain a nominal quantity of treating liquid for treating the textile web to be treated, a deviating roller rotatably located in said vat and having axle journal-free end faces including marginal end zones, said deviating roller floating in the liquid in said vat, the lower section of which and said deviating roller being spaced from each other to receive therebetween successive textile web sections fed to the deviating roller in said lower section of said

vat, and rotatable rolls arranged in pairs on both sides above said deviating roller and engaging marginal end zones only of said deviating roller, the rotatable rolls of each side of said deviating roller being spaced from each other.

4,214,462

DEVICE FOR PRE-TREATING AND POST-TREATING A TEXTILE WEB

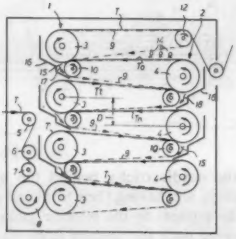
Klaus Meisen, Tönisvorst, Fed. Rep. of Germany, assignor to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Nov. 21, 1978, Ser. No. 962,625

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1977, 2751995

Int. Cl.[2] D06B *1/02*

U.S. Cl. 68—205 R **9 Claims**



1. A device for pre-treating and post-treating a textile web, especially knitted goods, which includes in combination: two at least nearly vertical rows of deviating drums arranged one above the other in each row and adapted to recieve and convey the textile web to be treated along a zigzag path from below in upward direction, the drums of one row being offset as to height relative to the drums of the other row by substantially the diameter of a deviating drum, rotatable endless belts respectively arranged below the textile web path between each two successive deviating drums along the zigzag path of the textile web to be treated, and a plurality of guiding rolls respectively drivingly connected with said deviating drums, each of said endless belts being looped around a deviating drum and the respective guiding roll following the last mentiond deviating drum along the path of movement for the textile web to be treated, spray means and deflecting plates respectively arranged in a chamber laterally of and below said deviating drums, the lower end of said plates at at least the approximate level of the next lower deviating drum extending between the path of movement for the textile web to be treated and the next higher endless belt.

4,214,463

DECORATIVE KEY RING AND METHOD FOR MAKING SAME

Roy Blumhof, Montvale, N.J., assignor to Joy Insignia, Inc., Guttenberg, N.J.

Division of Ser. No. 887,073, Mar. 16, 1978, Pat. No. 4,149,305. This application Jan. 15, 1979, Ser. No. 3,232

Int. Cl.[2] A47G *29/10*

U.S. Cl. 70—456 R **4 Claims**

1. A decorative attachment for a key ring comprising,

(a) a panel comprising a pair of sections in mirror symmetrical relation separated by a neck section of narrower width than the width of said panel sections,

(b) said panel being folded midway of said neck sections whereby said panel sections are in juxtaposed relation,

(c) the peripheral edges of said juxtaposed panel sections being secured by overedging for the entire extents thereof but leaving the neck section peripheral edges unsecured to define a passageway at said neck section for insertion therein of a key ring, and

(d) at least one of said panel sections having a decorative design embroidered thereon,

(e) said panels being unsecured to each other inwardly of said overedgingly secured peripheral edges.

4,214,464

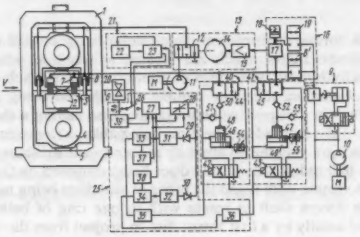
APPARATUS FOR CONTROLLING THE THICKNESS OF ROLLED PRODUCTS

Alim I. Chabanov, ulitsa Uritskogo, 12, kv. 73; Valery V. Danilyuk, ulitsa Revoljutsii, 6, kv. 46; Dzhavit K. Valeev, ulitsa Bljukhera, 20, kv. 26; Alfrid G. Bauer, ulitsa Petukhova, 46, kv. 73; Boris N. Petrov, ulitsa Deputatskaya, 26, kv. 16; Sergei N. Tropin, ulitsa Udarnaya, 1/2, kv. 52; Dmitry I. Chuguev, ulitsa Nemirovicha-Danchenko, 6, kv. 13; Ivan V. Ivanov, ulitsa Kostycheva, 8, kv. 7; Georgy A. Braun, ulitsa Nemirovicha-Danchenko, 135-b, kv. 68, and Valery M. Alexandrov, Tsvetnoi prospekt, 7, kv. 41, all of Novosibirsk, U.S.S.R.

Filed Dec. 28, 1978, Ser. No. 973,732

Int. Cl.[2] B21B *37/02, 37/08*

U.S. Cl. 72—8 **4 Claims**



1. An apparatus for controlling the thickness of a product rolled on a mill including a working stand which is fitted with work and backup rolls, which comprises hydraulically-operated cylinders controlling said work rolls connected one to another so as to form a closed-circuit hydraulic system during rolling, hydraulically-operated cylinders controlling the backup rolls, a rolled product thickness regulator connected to the hydraulically-operated backup roll controlling cylinders so as to change the roll-setting force depending on the fluctuations of the work roll gap specified, a differential pressure transducer reacting to the changes in the pressure in the closed-circuit hydraulic system and producing a signal to change the roll-setting force so as to stabilize the work roll gap, a gauge measuring the thickness of rolled product on the exit side of the stand and producing signals which change the work roll gap depending on the signal amplitude, a hydraulic volume compensator serving to control the volume of fluid in the closed-circuit hydraulic system of work roll gap control, a logic module for the control of said compensator, which is connected thereto with its output and to the thickness gauge with one of the inputs and is arranged so as to produce an output signal depending on the amplitude of the corrective signal indicating a discrepancy between the actual thickness of the rolled product and the specified gauge, said output signal determining the degree of hydraulic volume compensation, a

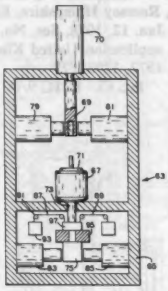
thickness gauge transportation lag unit which is coupled to the logic module and serves to clear or block the passage of the corrective signal therefrom to the hydraulic volume compensator.

4,214,465

TOLERANCE COMPENSATING DEFORMING PRESS

John E. Rode, Fonda, N.Y., assignor to Temper Corporation, Fonda, N.Y.

Filed Nov. 25, 1977, Ser. No. 854,484
Int. Cl.² B21B *31/34*
U.S. Cl. 72—36 **6 Claims**



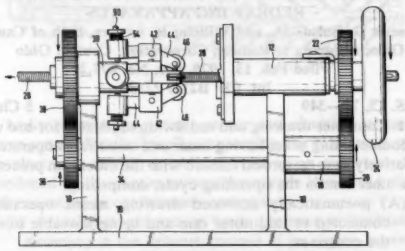
1. A press for forming an annular spacing element in a workpiece to an optimum height for that workpiece including a press frame for supporting the workpiece, a first press ram engageable with the workpiece to force the workpiece against the press frame, a second press ram engageable with a part of the workpiece distinct from the workpiece portions engaged by the press frame and first press ram, the annular spacing element being disposed between the distinct workpiece part and a workpiece portion engaged by at least one of the press frame and first press ram, and means for moving the second press ram to deform the annular spacing element.

4,214,466

APPARATUS FOR THE WINDING OF HELICAL SPRINGS

Jakob Lassche, Dunningen, Fed. Rep. of Germany, assignor to Hugo Kern und Liebers & Co., Schramberg, Fed. Rep. of Germany

Filed Sep. 19, 1978, Ser. No. 943,725
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743309
Int. Cl.² B21F *3/04*
U.S. Cl. 72—142 **10 Claims**



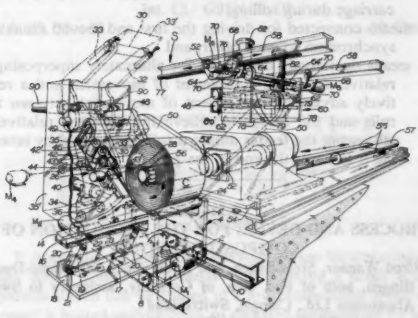
1. An apparatus for the winding of spring wire from a stationary supply spool into a helical or spiral spring, said apparatus comprising a rotationally driven winding mandrel having a forward end and being provided with a radial slot at its forward end for receiving and securing therein an end of the spring wire to be wound, said mandrel being axially movable, with the increasing length of a helical or spiral spring, being wound thereon, from a withdrawn or forward initial position into a projecting final position; and means for withdrawing said spring from the forward end of said mandrel in its projecting final position comprising: a transfer head, having a guide channel, positioned adjacent to the final position of the mandrel, said guide channel in the transfer head being in coaxial alignment with the mandrel for receiving the wound spring being withdrawn from said forward end of said mandrel for the passage of the spring therethrough; and at least one roller biased against the forward end of said mandrel and the end of the wound spring thereon in the final position of said mandrel for removing the wound spring from the mandrel, said one roller being rotatable in a plane passing through the rotational axis of said mandrel, and said one roller and said transfer head are mounted for rotation coaxially and synchronously with said mandrel whereby a spring of any desired length can be wound regardless of the length of said mandrel.

4,214,467

METAL COIL HANDLING SYSTEM

Subbiah Sankaran, Walnut Creek, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Mar. 5, 1979, Ser. No. 17,880
Int. Cl.² B21C *47/16*
U.S. Cl. 72—183 **41 Claims**

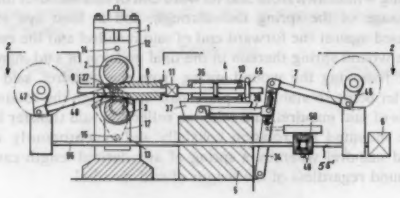


1. A system for unwrapping a coil of metal and threading the leading edge of said coil through rolling mill entry rolls or the like comprising a moveable coil support means, coil strip peeler means insertable between the leading edge of the metal coil and the remainder of the coil for disengaging and freeing said leading edge of the coil from the remainder of the coil, selectively operable mandrel and strip clamp means for successively piercing said coil and then engaging the leading edge of the coil after the coil strip peeler means has separated the leading edge of the coil from the remainder of the coil, means for rotating the coil on the coil support means so as to effect a feeding of the leading edge of the coil to said strip clamp means, means for actuating said strip clamp means to grip the leading edge of the coil, means for selectively rotating said strip clamp means while the leading edge of the coil is gripped by said strip clamp means simultaneously with said coil so as to align said leading edge of the coil with additional coil edge handling means after the strip clamp means has engaged and gripped the leading edge of the coil and means for operating and synchronizing the movements of all of said means.

4,214,468
HOT ROLLING PILGER MILL

Emil Vorbach, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Oct. 26, 1978, Ser. No. 954,829
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1977, 2749102
Int. Cl.[2] B21B 1/42
U.S. Cl. 72—189 8 Claims



1. In a hot pilger rolling mill, having a pair of grooved, contoured pilger rolls and means coupled to the rolls for transmitting motion upon them, further having a feeder with a carriage and a mandrel rod holding the hollow to be rolled, the improvement comprising:

a first crank;

first linkage means, including rod means connecting the first crank to the means for transmitting motion to thereby drive the pilger rolls;

a second crank;

second linkage means, including rod means connecting the second crank to the feeder carriage to reciprocate the carriage during rolling;

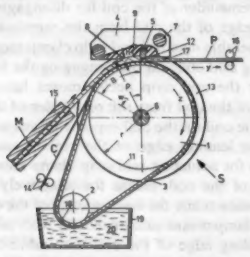
means connected for driving the first and second cranks in synchronism to each other; and

means operatively connected for alternately superposing a relative, retarding component of movement and a relatively advancing component of movement between the rolls and the feeder to relieve the rolls by, relatively, advancing the feeder during a rolling pass and by retarding it towards the end of the pass.

4,214,469
PROCESS AND DEVICE FOR THE PRODUCTION OF A COMPOSITE SECTION

Alfred Wagner, Steisslingen, and Adolf Ames, Hilzingen-Duchtlingen, both of Fed. Rep. of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Apr. 21, 1978, Ser. No. 898,659
Claims priority, application Fed. Rep. of Germany, May 5, 1977, 2720122
Int. Cl.[3] B21C 23/22, 23/24, 33/00
U.S. Cl. 72—258 5 Claims

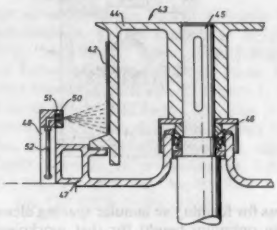


1. A process for the continuous extrusion of a composite metal section comprising a beam like section and a facing strip of another material which forms at least part of the surface of the beam like section, the beam like section of said composite is produced by extruding a metal matrix through a shape-giving opening in a stationary extrusion die, wherein said strip is fed to said stationary die at a first rate and said metal matrix is fed to said stationary die at a second rate less than said first rate by one endless face which moves continuously toward said stationary die so as to form said composite section.

4,214,470
METHOD AND APPARATUS FOR COOLING DRAWN WIRE

Michael J. Hurst, Southampton, England, assignor to Hi-Draw Machinery Ltd., Romsey Hampshire, England

Filed Jan. 12, 1978, Ser. No. 868,913
Claims priority, application United Kingdom, Jan. 14, 1977, 1578/77; Mar. 28, 1977, 12952/77
Int. Cl.[3] B21C 9/00
U.S. Cl. 72—286 5 Claims



1. Apparatus for cooling elongate material after it has been drawn through a die comprising:

spray means including at least two atomizer spray nozzles located downstream of the die at a predetermined spacing therefrom for supplying liquid coolant onto said elongate material, and

means for controlling the quantity of said coolant supplied by said spray nozzles,

the spaced relationship between said spray nozzles and said die being such as to allow the material to reach a desired temperature before the material reaches said first nozzle, which relationship in combination with the quantity of coolant controlled by said control means assures that all or substantially all of said sprayed liquid coolant applied to said elongate material is evaporized and the latent heat of evaporation of said liquid coolant serves to cool said elongate material.

4,214,471
TRIPLE ACTION CONTAINER DRAWING AND REDRAWING APPARATUS

Joseph D. Bulso, Jr., and William R. Lewers, both of Canton, Ohio, assignors to Redicon Corporation, Canton, Ohio

Filed Feb. 13, 1978, Ser. No. 877,292
Int. Cl.[2] B21D 22/28
U.S. Cl. 72—349 5 Claims

1. Container drawing and redrawing apparatus for use with a double acting press having inner and outer rams operated in relatively time reciprocal fashion with the outer ram preceding the inner ram in the operating cycle, comprising;

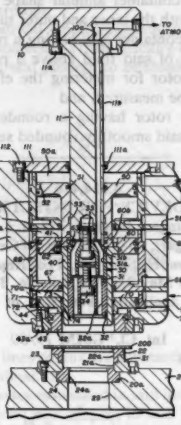
(A) pneumatically activated drawing means operatively connected to said outer ram and being movable toward the container;

(B) redrawing means operatively connected to said inner ram;

(C) said drawing means including a pressure piston system disposed around said redrawing means and including pneumatically actuated first and second pressure pistons

arranged in stacked relationship with the lower most piston having a radially inwardly extending lip;

(D) said redrawing means being slidably received within said drawing means and including a redraw horn assembly having a radially inwardly offset shoulder underlying and automatically engaging said lip of said lowermost pressure piston throughout a portion of the travel of said inner and



outer rams to retard movement of said drawing means; and

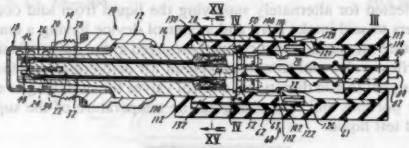
(E) said redrawing means being movable away from said drawing means and said shoulder thereof being movable out of underlying engagement with said lip of said pressure piston system upon completion of the movement of said drawing means during a further portion of the travel of said inner and outer rams for redrawing purposes.

4,214,472

EXHAUST GAS OXYGEN SENSOR AND ELECTRICAL CONNECTOR ARRANGEMENT

Mary E. Maxwell, Livonia, Mich., and Ronald F. Froats, Windsor, Canada, assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 22, 1979, Ser. No. 5,424
Int. Cl.² G01N *27/04*
U.S. Cl. 73—23 **8 Claims**



1. An exhaust gas oxygen sensor and electrical connector arrangement for electrically connecting the oxygen sensor to an electronic device capable of utilizing an electrical signal produced by the oxygen sensor, the oxygen sensor and electrical connector in combination comprising:

(a) an exhaust gas sensor having means to facilitate its mounting in the exhaust conduit of an engine, a ceramic metal-oxide oxygen-sensing element, at least one electrical conductor coupled to the oxygen-sensing element, a member of generally cylindrical shape through which the electrical conductor passes, and an oxygen sensor electrical terminal affixed to the cylindrically-shaped member and electrically connected to the conductor coupled to the oxygen-sensing element;

(b) at least one lead wire for use in coupling the oxygen-sensor terminal to the electronic device;

(c) a connector assembly for providing electrical connection of the lead wire to the oxygen-sensor terminal affixed to the cylindrically-shaped member and to provide a leak-proof contact with the cylindrically-shaped member for the protection of the electrical connection, the connector assembly comprising a grommet and a sleeve received within the grommet, the grommet being formed from elastomeric material and the cylindrically-shaped member of the oxygen sensor being partially received within the grommet, the grommet forming a leak-proof contact with the surface of the cylindrically-shaped member;

(d) cooperating means, associated with the oxygen sensor cylindrically-shaped member with the sleeve of the connector assembly, for forming a latching connection therebetween; and

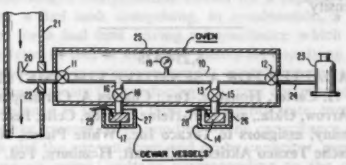
(e) connector terminal means, mounted within the sleeve of the connector assembly, for electrically connecting the lead wire to the oxygen-sensor terminal when the sleeve of the connector assembly and the cylindrically-shaped member of the oxygen sensor are latched together with their cooperating means.

4,214,473

GASEOUS TRACE IMPURITY ANALYZER AND METHOD

David Edwards, Jr., Bellport, and William Schneider, Setauket, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 18, 1978, Ser. No. 970,842
Int. Cl.² G01N *25/02*
U.S. Cl. 73—23 **10 Claims**



7. Apparatus for analyzing a cryogenic gas for trace impurities which comprises a metal vessel having a small branch portion which can be chilled to a low temperature while said vessel is heated uniformly to an elevated temperature by heating means, means for evacuating said vessel, means for introducing a sample of said gas into said vessel, means for chilling and then gradually warming said branch portion, a pressure gauge for measuring the pressure in said vessel, and a temperature gauge for measuring the temperature of said branch portion during the gradual warming thereof.

4,214,474

DENSITY MONITORING APPARATUS

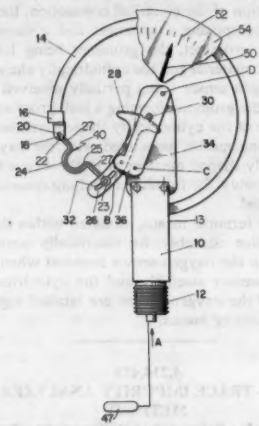
Rolf Bleidt; Joachim Nasterlack, both of Hanau; Kurt Neubeck, Miltenberg, and Achim Gareus, Amorbach, all of Fed. Rep. of Germany, assignors to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland and Alexander Wiegand GmbH Co., Klingenberg, Fed. Rep. of Germany

Filed Oct. 4, 1978, Ser. No. 948,473
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1977, 2744549
Int. Cl.² G01N *9/26*
U.S. Cl. 73—30 **7 Claims**

1. Apparatus for monitoring density of gas in a pressurized container comprising:

pressure response means including a Bourdon tube for sensing the pressure of the gas and providing pressure-related movement;

indicating means including a segment lever, operable in response to the pressure-related movement of the Bourdon tube for providing a visual indication of the pressure-related movement; and



thermal compensating means connected between the pressure responsive means and the segment lever of the indicating means, being the mechanical connection for transmitting pressure-related movement of the Bourdon tube to the indicating means, and operable to equalize the pressure-related movement attributable to changes in gas temperature such that the indicating means indicates gas density.

4,214,475

ADAPTER FOR A SENSITIVE VISCOMETER

Walter H. Carter, Houston, Tex.; Charles A. Christopher, Broken Arrow, Okla., and Karl-Heinz Grodde, Celle, Fed. Rep. of Germany, assignors to Texaco Inc., White Plains, N.Y. and Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Jun. 30, 1978, Ser. No. 920,940
Int. Cl.[2] G01N *11/14*
U.S. Cl. 73—59 **8 Claims**

1. In a rheometer for measuring low viscosities at low shear rates, an improved adapter for a sensitive viscometer, comprising

a cylindrical stationary container for holding a predetermined quantity of fluid to be measured, and

a cylindrical inverted cup shaped rotor adapted for free rotation within said stationary container and for cooperating with said container and fluid to create drag related to said viscosity,

said stationary container having an annular shape comprising a coaxial inner cylinder having an outside diameter less than the inside diameter of said rotor and a smoothly rounded surface joining it with said stationary cylindrical container at the bottom to reduce eddy currents in said fluid,

said stationary container annular shape providing reaction surfaces on both the inner and outer surfaces of said rotor,

said stationary container also having a reservoir for receiving overflow of said fluid above a predetermined level within said rotor for metering the effective quantity of said fluid to be measured, and

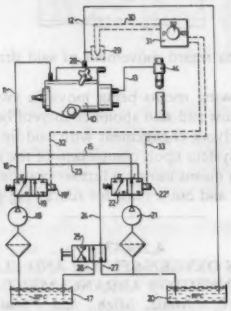
said cylindrical rotor having a rounded bottom edge to complement said smoothly rounded surface.

4,214,476

TESTING DEVICE FOR INJECTION PUMPS

Claus Köster, Ditzingen; Joachim Siegert, Leonberg, and Heinz Nothdurft, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 9, 1979, Ser. No. 37,453
Claims priority, application Fed. Rep. of Germany, May 11, 1978, 2820542
Int. Cl.[3] G01M *19/00*
U.S. Cl. 73—119 A **4 Claims**



1. A device for testing injection pumps having a flow-return port with an overflow valve, an intake port and a test port, comprising a pair of containers for storing respectively a test liquid at different temperatures; a pair of delivery pumps assigned to said containers; a pair of directional control valves connected for alternately supplying the liquid from said containers to said intake port; and a control device having a temperature measuring input element arranged at the outlet of said overflow valve and an output conduit for delivering an actuation signal to said directional control valves for switching over their portions and thus changing the temperature of the supplied test liquid.

4,214,477

FLANGELESS ELECTROMAGNETIC FLOWMETER

Roy F. Schmoock, Yardley, Pa., assignor to Fischer & Porter Co., Warminster, Pa.

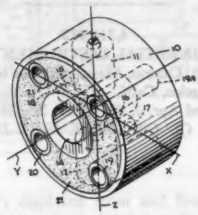
Division of Ser. No. 811,276, Jun. 29, 1977, Pat. No. 4,098,118.
This application Dec. 7, 1978, Ser. No. 967,138
The portion of the term of this patent subsequent to Jul. 4, 1995, has been disclaimed.
Int. Cl.[2] G01F *1/58*
U.S. Cl. 73—861.12 **5 Claims**

1. A flangeless electromagnetic flowmeter insertable between upstream and downstream pipes which have the same internal diameter, the adjacent ends of said pipes having like

annular flanges, each provided with a like series of holes which lie in a circle, said flowmeter comprising:

A a cylindrical flowmeter body interposed between the flanged ends of the pipes, said body being provided with an annular pressure vessel formed of insulating material to define a central flow passage having a diameter matching the internal diameter of the pipe whereby the flowmeter functions to meter the flow rate of fluid passing through said pipes and said passage along a longitudinal axis extending therethrough;

B a pair of cylindrical electromagnetic coils embedded in said insulating material at diametrically-opposed positions with respect to said passage to establish a magnetic field



therein whose lines of flux are substantially perpendicular to said longitudinal axis;

C a pair of electrodes embedded in said insulating material at opposed positions with respect to said passage, said electrodes lying along a transverse axis at right angles both to said lines of flux and said longitudinal axis; said insulating material having bores extending longitudinally therethrough which lie on a circle concentric with said central flow passage and which avoid said coils and said electrodes; and

D means bridging said flanged ends to clamp said flowmeter body therebetween, said means being formed by bolts passing through said flange holes and the bores in registration therewith.

4,214,478

SYSTEM AND METHOD FOR ELIMINATING ERRORS IN AIRFLOW MEASUREMENT APPARATUS

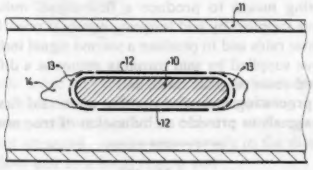
Heinz Lauterbach, Esslingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 29, 1978, Ser. No. 946,966

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1977, 2751196

Int. Cl.³ G01F *1/68*

U.S. Cl. 73—204 **10 Claims**



1. In airflow measuring apparatus having a support carrier (10, 10') located in said airflow, a temperature-varying resistance sensor layer (12) on said carrier and supported thereby whereby the resistance sensor layer (12) will be in thermal transfer relation with respect to both said airflow and said carrier, and regulator means (16) for varying the current through said temperature-varying resistance sensor layer in such a manner that the temperature, and hence resistance of said temperature-varying resistance sensor layer remains substantially constant at a predetermined operating temperature, independent of the amount of airflow therealong,

the improvement comprising a substantially temperature independent heating means (13) positioned in heat-conductive relation with respect to said support carrier (10, 10') and electrically insulated from the temperature-varying resistance sensor layer (12) on said carrier to heat said carrier to a carrier temperature corresponding to said operating temperature, whereby errors in measurement resulting from heating and cooling of said carrier are substantially decreased.

4,214,479

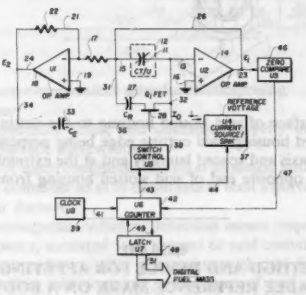
CAPACITIVE TYPE FUEL PROBE COMPENSATION CIRCUIT

Lawrence C. Maier, Middlebury, Vt., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Filed May 21, 1979, Ser. No. 42,252

Int. Cl.² G01F *23/26*

U.S. Cl. 73—304 C **9 Claims**



1. A full height compensation circuit for a capacitive type probe for a fuel tank comprising, in combination, a probe capacitor for a fuel tank having a capacitance which varies with the level of fuel in said tank, means for supplying a current to said probe capacitor, means for controlling said current supply means, means for producing a current corresponding to the capacitance of said fuel tank in an empty state, means for summing the current corresponding to the capacitance of said fuel tank and the current from said probe capacitor, means for producing an output voltage corresponding to the current from said summing means, means for integrating said output voltage and means for converting said integrated output voltage to a digital number proportional to the mass of fuel sensed by said probe capacitor.

4,214,480

INTEGRATED SMOKE TESTER

Anthony W. Butera, 112 Tuthill St., Port Jefferson, N.Y. 11777

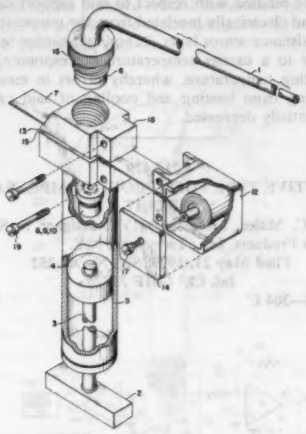
Filed Sep. 13, 1978, Ser. No. 941,956

Int. Cl.² G01N *1/24*

U.S. Cl. 73—421.5 A **5 Claims**

1. An integrated smoke tester for use in sampling and testing the smoke of flue gasses of an oil burner and for determining the smoke content and smoke spot number of said flue gasses by withdrawing a predetermined sample of flue gasses from an oil burner flue pipe with said tester comprising: a sampling test probe, a hand operated vacuum pump containing a longitudinal bore housing and a valve, a built-in test strip material dispenser and cover for containing a roll of strip material for rotation about an axis, said dispenser being attached to a slotted housing attached to said pump housing and containing a cutting edge, a clamping assembly for securing said strip material between a sealing surface of said slotted housing and a parallel movable sealing surface of said clamping device, the rotational axis of said roll being located laterally and perpendicular to the

longitudinal axis of the bore of said pump, said dispenser containing a slot located adjacent said slot in said slotted housing whereby a continuous slot is provided running from the dispenser, between the surface of said clamping assembly and



sealing surface of said slotted housing to the cutting edge of said slotted housing, said cutting edge being perpendicular to said bore axis and spaced laterally and at the extremity of said slot at an opposite end of said slotted housing from said dispenser.

4,214,481

METHOD AND DEVICE FOR APPLYING A DETECTABLE REFERENCE MARK ON A BODY TO BE BALANCED

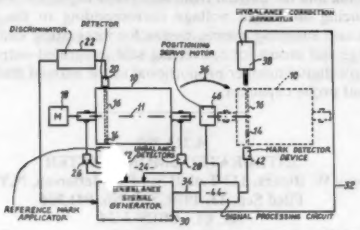
Wolf-Dieter Reutlinger, Novalisstrasse 5, D-6100 Darmstadt, Fed. Rep. of Germany

Filed Dec. 22, 1978, Ser. No. 972,518

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1978, 2839819

Int. Cl.³ G01M *4/26*

U.S. Cl. 73—462 **21 Claims**



1. A method for balancing a body having an axis and a peripheral ferromagnetic portion thereabout and comprising the steps of:

(a) applying a detectable reference mark on the body,

(b) rotating the body about the axis at an unbalance measuring rotary speed,

(c) while the body is so rotating detecting the reference mark and generating therefrom a reference signal for measuring the unbalance position,

(d) while the body is so rotating measuring the unbalance of the body as to amount and unbalance position making use of the reference signal,

(e) thereafter detecting the reference mark and positioning the body relative to unbalance correcting apparatus in accordance with this detecting and with the unbalance position measured relative to the reference mark, and

(f) while the body is so positioned correcting the measured unbalance,

characterized in that the application of the reference mark comprises the steps of:

magnetic homogenizing said peripheral portion to define a rotating track of the body of substantially magnetic homogeneity; and

thereafter generating a substantially instantaneous magnetic pulse of high intensity at a location immediately adjacent the rotating track for generating a locally limited permanent magnetization serving as said reference mark.

4,214,482

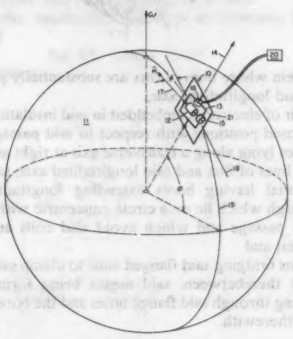
INERTIAL INSTRUMENT

John R. Bouchard, Canton, Mass., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Apr. 2, 1979, Ser. No. 26,332

Int. Cl.³ G01C *19/08, 19/34, 19/42*

U.S. Cl. 73—504 **6 Claims**



1. A gyrocompass for indicating the direction of true north comprising:

a gyroscope rotor;

a permanent magnet motor adapted to spin said rotor about a spin axis at varying angular rates;

gimbal means to support said rotor for angular rotation about said spin axis and to allow angular rotation of said rotor from a null position about an output axis perpendicular to said spin axis;

torquing means to maintain said rotor at said null position about said output axis;

measuring means to produce a first signal indicating the torque supplied by said torquing means at one of said rotor angular rates and to produce a second signal indicating the torque supplied by said torquing means at a different one of said rotor angular rates; and

signal processing means to operate upon said first and second signals to provide an indication of true north.

4,214,483

APPARATUS FOR MEASURING ANGULAR SPEED

Niels O. Young, VanHornesville, N.Y., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Aug. 10, 1978, Ser. No. 932,472

Int. Cl.² G01P *3/22*

U.S. Cl. 73—518 **27 Claims**

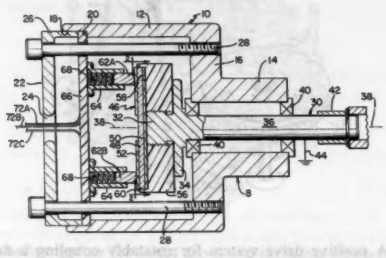
1. Apparatus for measuring the angular speed of a rotating shaft, said apparatus comprising:

capacitive charge storage means for storing charge, said charge storage means including a disk mounted on and

rotatable with said shaft, said disk defining at least one capacitor rotatable about the rotation axis of said shaft at an angular velocity related to the speed of said shaft;

charging means in contact with said charge storage means for charging said charge storage means at a first predetermined angular position of the latter;

discharging means in contact with said charge storage means for discharging said charge from said charge storage means at a second predetermined angular position of the



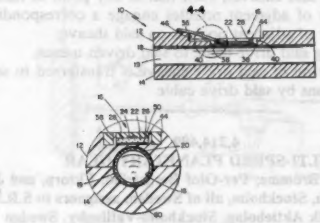
latter angularly displaced from said first position, said charging and discharging means being electrically isolated from one another so that the injection of charge through said charging means into said charge storage means and the subsequent discharge thereof through said discharge means following rotation of said shaft through the angular displacement between said first and second angular positions will produce an electrical signal having a value linearly related to the speed of said shaft.

4,214,484

ULTRASONIC PARTICULATE SENSING

Leigh R. Abts, Providence, R.I., assignor to Rhode Island Hospital, Providence, R.I.

Filed Oct. 16, 1978, Ser. No. 951,614
Int. Cl.[2] G01N *29/02*
U.S. Cl. 73—632 **14 Claims**



1. A pulse echo device for obtaining information about matter discontinuities in a flowing fluid comprising:

a transmitter-receiver lens with a concave surface positioned to direct ultrasonic energy transversely to the direction of fluid flow and to a focal region and

a damping means integral with said lens and positioned on the side opposite said concave surface for supporting an acoustical transducer, said damping means including a ridge spaced apart from a conduit containing the flowing fluid, said ridge surrounding and defining a blind hole, said hole being for receiving said acoustical transducer and having a bottom surface which forms a second surface of said lens opposite said concave surface,

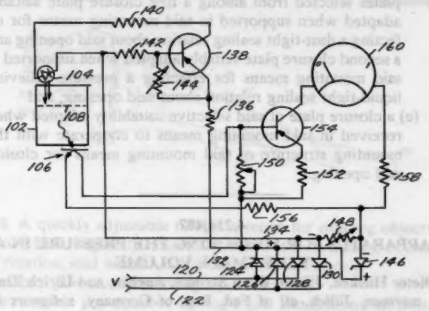
whereby ultrasonic energy directed toward said lens is focused and energy directed toward said ridge is damped.

4,214,485

ELECTRO-MECHANICAL TRANSDUCER

Paul J. Berger, 200 Northern Lights Blvd., Kalispell, Mont. 59901, and Ronald F. Shane, Kalispell, Mont., assignors to Paul J. Berger, Kalispell, Mont.

Filed Jun. 7, 1978, Ser. No. 913,517
Int. Cl.[2] G01H *3/12*
U.S. Cl. 73—655 **91 Claims**



1. An electro-mechanical transducer comprising:

a container;

a liquid partially filling said container thereby defining a liquid surface therewithin;

a source of electromagnetic radiation mounted with respect to said container so as to illuminate at least a portion of the interior thereof;

an electromagnetic radiation detection means responsive to said source, mounted with respect to said container so as to detect radiation after interaction with said liquid surface within said container, movement of said container causing the output of said detection means to vary as a result of the changing transmissive and refractive properties of said liquid surface; and

means for directing the radiation from said source so that substantially all of the radiation passes at least once through said liquid surface before impinging on said detection means.

4,214,486

SEALED CASING FOR PRESSURE GAUGE

Joseph E. Gorgens, Trumbull; Frederick M. Kipp, Fairfield, and Robert D. Bissell, Orange, all of Conn., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 767,093, Feb. 9, 1977, abandoned. This application Sep. 28, 1978, Ser. No. 946,895
Int. Cl.[2] G01D *11/26*; G01L *7/04*
U.S. Cl. 73—738 **16 Claims**

1. A gauge instrument comprising in combination:

(a) a condition responsive element operative to produce a predictable displacement in response to exposed condition changes to which it is sensitive;

(b) output means operably connected to said condition responsive element for reflecting the displacement position thereof;

(c) a gauge case substantially containing said condition responsive element and defining an opening for exposing said condition responsive element to the case exterior;

(d) mounting means extending about said gauge case opening having a mounting structure commonly receptive for one at a time mounting of selectively different closure plates selected from among a first closure plate suitably adapted when supported in said mounting means for effecting a dust-tight sealing relation about said opening and a second closure plate suitably adapted when supported in said mounting means for effecting a pressure relieving liquid-tight sealing relation about said opening; and

(e) a closure plate of said selective suitability adapted when received in said mounting means to cooperate with the mounting structure of said mounting means for closing said opening.

4,214,487

APPARATUS FOR MEASURING THE PRESSURE IN A VERY SMALL VOLUME

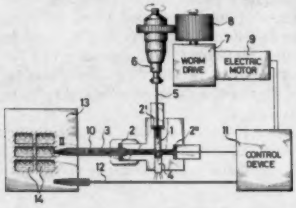
Dieter Hüsken, Jülich; Ernst Steudle, Aachen, and Ulrich Zimmerman, Jülich, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Oct. 10, 1978, Ser. No. 949,965

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1977, 2745437

Int. Cl.[2] G01L 9/00

U.S. Cl. 73—753 **3 Claims**



1. An apparatus for measuring the pressure in a very small volume, especially capillary vessels and biological cells, in a fluid, which apparatus comprises:

a pressure-tight chamber fillable with a nearly incompressible medium;

a microcapillary tube for penetrating said volume, both ends of said tube being open, one end communicating with said chamber;

a device communicating with said chamber for converting pressure therein to electrical values;

means extending into said chamber and movable for partially displacing medium therein;

a first electrode arranged within said microcapillary tube and having a tip end extending nearly to the other open end of said tube;

a second electrode in the form of a reference electrode;

a control device electrically connected to both of said electrodes for regulating an interface, located in said microcapillary tube during measurement, between said medium and fluid penetrating said tube from said volume, said control device effecting said regulation of the interface by moving said medium-displacing means within said chamber as a function of electrical resistance between said electrodes and a predetermined rated resistance value; and

means operatively connected to said control device for effecting said movement of said medium-displacing means.

4,214,488

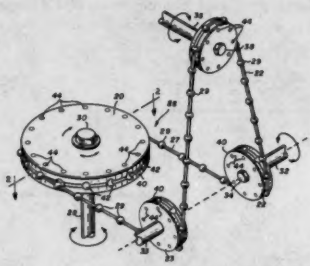
POSITIVE DRIVE SYSTEM

René A. Conrad, Woodside, Calif., assignor to Dynaloc Corporation, San Mateo, Calif.

Filed Oct. 27, 1977, Ser. No. 845,929

Int. Cl.[2] F16G 1/28

U.S. Cl. 474—148 **18 Claims**



1. A positive drive system for rotatably coupling a drive means to a driven means, said drive system comprising:

a drive sheave having a groove formed around its curved surface and a plurality of cylindrically-shaped pockets formed along said groove means, said pockets being separated from adjacent pockets by a distance defining the pitch of the sheave and having a depth beneath the bottom of said groove greater than one-half of the cylindrical diameter thereof;

means for driving said first sheave;

a first drive cable disposed to engage said sheave including;

a single length of flexible 7×19 preformed and lubricated multistrand cable having its ends attached to each other to form a continuous, endless loop, said cable having an outside diameter less than the width of said groove;

a plurality of nodules each consisting of a mass of material formed into a regular, geometric spherical solid having a diameter slightly less than the diameter of said pockets, said nodules being swagedly attached to said cable in regular, spaced apart disposition, the distance between adjacent nodules being substantially equal to the pitch of said sheaves, such that at any point in time a plurality of adjacent nodules engage a corresponding plurality of adjacent pockets on said sheave;

means linking said drive cable to said driven means;

whereby motion of said drive sheave is transferred to said driven means by said drive cable.

4,214,489

MULTI-SPEED PLANETARY GEAR

Karl G. Ahlen, Bromma; Per-Olof Bergström, Ektorp, and Joseph Supanich, Stockholm, all of Sweden, assignors to S.R.M. Hydromekanik Aktiebolag, Stockholm-Vallingby, Sweden

Filed Aug. 13, 1976, Ser. No. 714,287

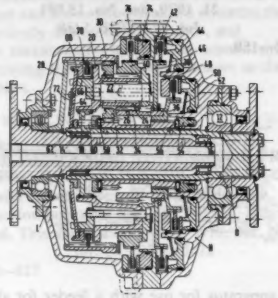
Claims priority, application United Kingdom, Jan. 29, 1976, 3572/76; Fed. Rep. of Germany, Apr. 30, 1976, 2619011

Int. Cl.[2] F16H 57/10

U.S. Cl. 74—761 **37 Claims**

1. A multi-speed planetary gear comprising, a casing, a primary shaft and a secondary shaft, each of said shafts being journalled with respect to the casing, a planet carrier drivingly connected to one of said shafts, at least one planet gear rotatively mounted on said planet carrier, said planet gear having at least two gear surfaces of different diameters, at least three annular gears, one of said annular gears being a drive annular gear in the form of a ring gear engaged with the shaft other than the shaft with which the planet carrier is drivingly connected, each of the remaining annular gears being engageable with one of the planet gear surfaces, such that each gear surface has at least one annular gear engageable therewith, cou-

pling means associated with each of said remaining annular gears for connecting it against rotation relative to the casing, and a coupling means for connecting the primary and secondary shafts together for direct drive, and including servo-motor means for connecting each of the said coupling means, each of said servo-motor means being mounted in the casing against rotation relative to the casing.

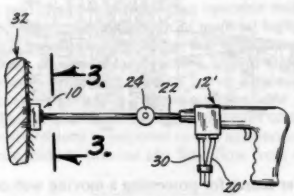


4,214,490

METHOD AND MEANS FOR PLACING AN IDENTIFICATION MARK ON A HOG

Franklin J. Chizek, 500 Shannon Rd., Papillion, Nebr. 68046

Filed Jun. 12, 1978, Ser. No. 914,599
Int. Cl.[3] B43K *5/00*
U.S. Cl. 81—9.22 **6 Claims**



1. The method of placing an identification mark on a hog comprising the steps of:

(1) providing a power head in communication with a source of marking fluid;

(2) providing an identification indicia support means which is in fluid communication with said power head and which includes a plurality of injection openings;

(3) placing the identification indicia support means into engagement with at least the exterior surface of the skin of the hog;

(4) pressurizing marking fluid in said power head; and

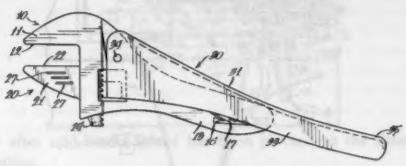
(5) selectively supplying the pressurized marking fluid from said power head to said identification indicia support means under sufficient pressure for injecting said fluid through said injection openings and through the hog's skin to leave an identification mark on the hog at least under the hog's skin so that the said mark will be visible upon subsequent removal of the skin from the hog.

4,214,491

QUICKLY ADJUSTABLE RATCHET WRENCH

Werner W. Martinmaas, 650 South Rock Blvd., Unit 3, Reno, Nev. 89502

Continuation of Ser. No. 909,104, May 24, 1978, abandoned. This application Aug. 1, 1979, Ser. No. 62,892
Int. Cl.[3] B25B *13/14*
U.S. Cl. 81—134 **23 Claims**



1. A quickly adjustable ratchet wrench for rotating objects which have angularly related flat surfaces surrounding an axis of rotation, said wrench comprising, in combination:

a fixed jaw member having a jaw element;

a movable jaw member having a jaw element and an elongated engaging surface;

means mounting said movable jaw member for linear translatory movement of the fixed jaw member between closed and open positions of said jaw elements;

a jaw spring lightly biasing said movable jaw member toward closed position so that said fixed and movable jaw elements normally close lightly upon an object between them;

locking means supported on the fixed jaw member including a locking face which is selectively engageable with said engaging surface to lock the jaw elements closed upon an object between them; and

a lever on the fixed jaw member which constitutes the sole means for engaging and disengaging said engaging surface and said locking face, said lever having a forward part which is channel-like with side webs flanking the fixed jaw member, a transverse pivot pin extending through the side webs to pivot the lever on said fixed jaw member, and a transverse web which bears on a part of the fixed jaw member when the engaging surface and the locking face are engaged so that manual force applied to the lever is transmitted through the fixed jaw member to rotate an object upon which the jaws are closed, and which pivots away from said part of the fixed jaw member to disengage said engaging surface and locking face and thereby release the movable jaw member for free linear movement against the bias of the spring, said lever being so related to the fixed jaw member that a user may manually grip the lever with one hand while leaving the fixed jaw member free, whereby the movable wrench jaw may be alternately locked solely by rotation of the lever in one direction to grip opposite flat surfaces of an object between the jaw elements to rotate said object and released solely by rotation of the lever in the other direction for free rotation of the jaw elements around angles between adjacent flat surfaces of the object without rotating said object.

4,214,492

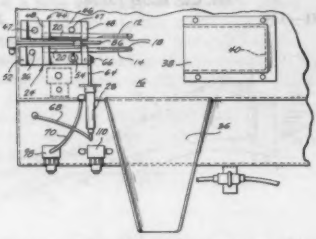
METHOD AND APPARATUS FOR CUTTING CLIPS OFF OF THE ENDS OF SAUSAGES AND THE LIKE

Thomas M. Hoffman, 2147 S. 18th St., Manitowoc, Wis. 54220

Filed Dec. 26, 1978, Ser. No. 972,976
Int. Cl.[2] B26D *5/04, 5/12, 11/00*
U.S. Cl. 83—24 **16 Claims**

1. An apparatus for cutting clips off of the ends of adjacent pairs of sausages or the like, the clips being located between adjacent sausage ends, said apparatus comprising a pair of clippers having cutters, means for permitting relative movement of said pair of clippers between a first position wherein

the cutters of said clippers are positioned in mutually adjacent relation and a second position wherein said cutters engage the ends of the adjacent sausages and are positioned between said clips and said ends, means for actuating said clipper moving means to cause said cutters to move from said first position to



said second position, and means for automatically actuating said pair of clippers when said cutters engage said ends and causing said cutters to cut through the outer skin at the adjacent ends of the sausages to effect removal of the clip or clips therebetween.

4,214,493

CIRCULAR SAW

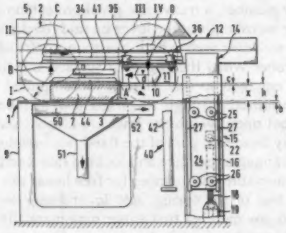
Friedrich W. Elhaus, Hofkamp 140, D-5600 Wuppertal 1, Fed. Rep. of Germany

Filed Feb. 15, 1978, Ser. No. 877,919

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1977, 2706336

Int. Cl.³ B23D *47/02, 47/10;* **B27B** *5/18*

U.S. Cl. 83—100 **12 Claims**



1. A circular saw for industrial use in sawing elongated bars or billets of metallic material comprising:

a rotatable saw blade;

means attached to said saw blade, for guiding said saw blade horizontally, said horizontal guide means being positioned on a cantilevered beam element;

means for vertically guiding said cantilevered beam element, said vertical guide means engaging a vertical support member and one end of said cantilevered beam element, whereby the other end of said cantilevered beam element is unsupported, thereby providing free access for handling the material and for controlling saw movement from an area adjacent said other end of said cantilevered beam element;

automatic drive means for movement of said saw blade horizontally along said horizontal guide means and for movement of said cantilevered beam element vertically along said vertical guide means in a predetermined sequence of horizontal and vertical movements.

4,214,494

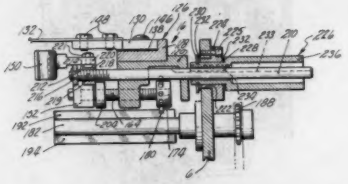
APPARATUS FOR STRAIGHT LINE SHEARING

Francis A. Dahms, Tariffville, Conn., assignor to Emhart Industries, Inc., Farmington, Conn.

Division of Ser. No. 876,086, Feb. 8, 1978. This application Feb. 21, 1979, Ser. No. 13,091

Int. Cl.² C03B *5/38*

U.S. Cl. 83—150 **6 Claims**



1. In an apparatus for use with a feeder for shearing gobs from a column of plastic material and including at least one set of oppositely disposed upper and lower shear blades movable in a straight line toward and away from each other and a drop guide positioned under said upper blade and movable therewith, the improvement comprising means mounting said drop guides for movement with said upper blade, means for moving said drop guide in the direction of travel of said shear blades relative to said shear blade, and means for pivoting said drop guide about a vertical axis.

4,214,495

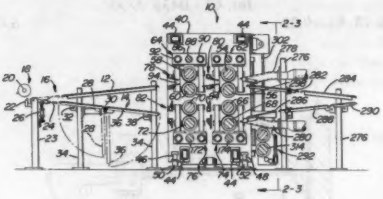
SLITTER SCORER APPARATUS

Robert E. Coburn, Warminster, Pa., assignor to Molins Machine Company, Inc., Cherry Hill, N.J.

Filed Feb. 9, 1979, Ser. No. 10,560

Int. Cl.² B26D *3/08, 11/00*

U.S. Cl. 83—425.4 **8 Claims**



1. A slitter scorer for processing a moving web comprising:

(a) first and second upright side frames, each side frame having an upstream end and a downstream end,

(b) an upper pair of rotatable slitter shafts downstream from an upper pair of scorer shafts, a lower pair of rotatable slitter shafts downstream from a lower pair of scorer shafts, each of said pairs of shafts being supported by said side frames, a plurality of mating pairs of tools on each of said pairs of shafts, said upper pairs of shafts defining an upper web path, said lower pairs of shafts defining a lower web path,

(c) a tool positioner for each of said pairs of shafts, the tool positioners for the upper pairs of shafts being guided for reciprocation parallel with the axes of said pairs of shafts at an elevation above the elevation of their respective pairs of shafts, each tool positioner for the lower pairs of shafts being guided for reciprocation parallel with the axes of said pairs of shafts at an elevation below the elevation of their respective pairs of shafts, each tool positioner being arranged to simultaneously shift a pair of tools axially along its associated pair of shafts, each tool posi-

tioner having a parking position adjacent one of said side frames,

(d) a motor supported by said first side frame and coupled to said pairs of shafts for selectively driving all pairs of shafts, or only the upper pairs of shafts, or only the lower pairs of shafts, and clutch means associated with each of the upper and lower pairs of shafts whereby the latter may be selectively driven by said motor, and

(e) motor means supported by said second side frame for reciprocating the upper tool positioners or the lower tool positioners.

4,214,496

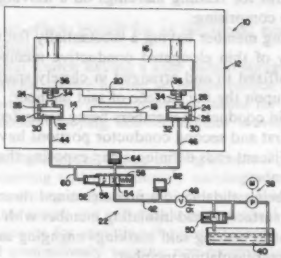
SHOCK DAMPENING SYSTEMS FOR PRESSES

Louis F. Carrieri, LaGrange Park, Ill., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Continuation-in-part of Ser. No. 765,981, Feb. 7, 1977, abandoned. This application Oct. 6, 1978, Ser. No. 949,273

Int. Cl.[2] B26D *5/12*

U.S. Cl. 83—617 **68 Claims**



1. In a hydraulic shock dampening system for a shearing press having frame means including bed means and supporting reciprocable slide means and wherein material is severed between cooperable shearing means supported by said bed and slide means, said system including hydraulic fluid receiving variable volume chamber means between said bed means and slide means and connected to a source of hydraulic fluid under pressure, said chamber means being operable under compression in response to breakthrough of material being sheared by said shearing means supported by said slide means to restrain the resulting accelerated movement of said slide means, the improvement comprising: shutoff valve means in fluid flow communication with said chamber means, said valve means having opened and closed modes, and means completely closing said valve means in response to said accelerated movement of the press slide to prevent any fluid flow from said chamber means.

4,214,497

APPARATUS FOR STRAIGHT LINE SHEARING

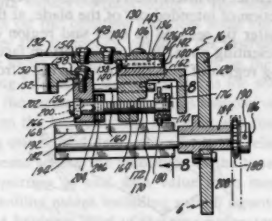
Francis A. Dahms, Tariffville, Conn., assignor to Emhart Industries, Inc., Farmington, Conn.

Division of Ser. No. 876,086, Feb. 8, 1978, Pat. No. 4,174,647. This application Feb. 21, 1979, Ser. No. 13,483

Int. Cl.[2] C03B *5/38*

U.S. Cl. 83—640 **3 Claims**

1. In an apparatus for use with a feeder for shearing gobs from a column of plastic material and including at least one set of oppositely disposed shear blades movable in a straight line toward and away from each other, the improvement comprising mounting means for mounting at least one of said blades, said mounting means including a blade holder to which said one blade is attached and having a lower surface, a support member having an upper surface disposed under said lower surface of said blade holder, pin means positioned between said upper and lower surfaces and having an axis extending in the direction of movement of said blades to permit said blade holder to pivot about said axis relative to said support member, and means for securing said blade holder to said support member after said blade holder has been pivoted to the desired position.



4,214,498

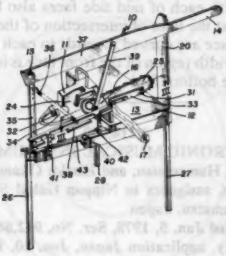
WOOD CUTTING APPARATUS

Peter W. Zukas, and William Zukas, both of Smithville Rd., Spencer, Mass. 01562

Filed Oct. 13, 1978, Ser. No. 951,186

Int. Cl.[2] B27B *17/02*

U.S. Cl. 83—796 **7 Claims**



1. Wood cutting apparatus, comprising:

(a) a table providing a horizontal surface at a working height,

(b) a vertical post extending upwardly from the table,

(c) an elongated primary arm pivotally mounted to the upper end of the post for hinged motion about a horizontal axis extending through an end of the arm at one side of the surface and having its other end located at the other side of the table, said primary arm including a handle position,

(d) a secondary arm pivoted to the lower part of the post,

(e) a link pivotally connected to the primary and secondary arms to hold them in spaced parallel relationship,

(f) means for fastening a chain saw to the secondary arm so that downward pivotal motion of the primary and secondary arms causes the saw to engage a piece of wood supported on said horizontal surface, and

(g) a spring for maintaining the primary and secondary arms in an upper inoperative position.

4,214,499

CUTTER TOOL WITH A PLURALITY OF HARD CUTTING TEETH

Glynn A. Ellis, Canal St., Long Eaton, Nottingham, Nottinghamshire, England

Filed Apr. 17, 1978, Ser. No. 897,284

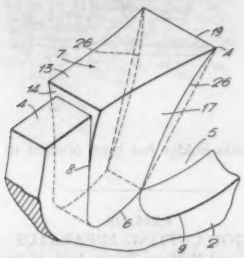
Claims priority, application United Kingdom, Apr. 16, 1977, 15903/77

Int. Cl.[2] B27B *33/02*

U.S. Cl. 83—855 **9 Claims**

1. A planar cutter blade including a body having oppositely

presented flat parallel lateral faces and having an edge region with a series of regularly spaced gullet forming notches provided therein, each such notch being shaped to provide a workpiece cutter tip insert receiving region located, in relation to the direction of intended cut of the blade, at the rear of the notch; a cutter tip secured in each said region of the gullets each tip presenting a rear face and a bottom face towards the tip receiving region of the notch and having a front face and a



top face which are inclined to each other to define the workpiece cutting edge of the tip, and two opposed side faces which are inclined towards each other both in the direction front face towards the rear face and in the direction top face towards the bottom face, with each of said side faces also being dished in such manner that the lines of intersection of the two side faces with the front face are curved inwards to each other whereby the narrowest width region of the front face is intermediate the top face and the bottom face.

4,214,500

ELECTRONIC MUSICAL INSTRUMENTS

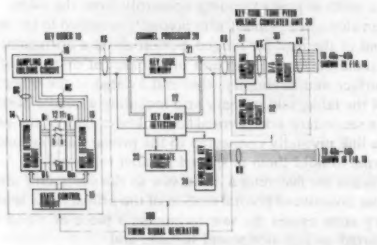
Takeshi Adachi, Hamamatsu, and Eisaku Okamoto, Hamakita, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 5, 1978, Ser. No. 912,868

Claims priority, application Japan, Jun. 10, 1977, 52-67821; Sep. 24, 1977, 52-114983

Int. Cl.[2] G10H *1/02*

U.S. Cl. 84—1.01 **11 Claims**



1. In an electronic musical instrument of the type comprising a keyboard having a plurality of keys; a plurality of musical tone generating channels each for producing a musical tone having pitch, tone color and envelope elements, the number of said channels being less than that of said keys; a circuit for generating key codes that identify depressed keys of said keyboard; a channel assigner circuit for assigning, in a substantially irregular manner, each of said key codes to a channel ready for receiving them; and means for generating, in response to each of said key codes, a first signal for designating the pitch of musical tones to be generated, and a second signal for determining the timing of the generation of said musical tones; the improvement which comprises musical tone element control means for producing a musical tone element control signal which modifies at least one of said pitch, tone color, and envelope of the musical tone generated by at least one channel differently from the pitch, tone color, and envelope of the musical tone generated by another channel.

4,214,501

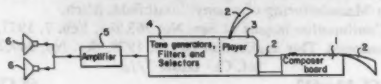
MUSICAL COMPOSER INSTRUMENT AND ELECTRONIC PLAYER (ELECTRONIC COMPOSER)

Miklos von Kemenczky, 112 Warrenville Rd., Green Brook, N.J. 08812

Filed Oct. 19, 1978, Ser. No. 952,646

Int. Cl.[2] G10F *5/04*; B43L *13/24*; G06K *7/06*

U.S. Cl. 84—1.03 **21 Claims**



1. Apparatus for reading markings on a moving elongated flexible strip comprising:

an insulating member having a substantially flat surface;

a plurality of thin elongated conductive members permanently affixed to and arranged in closely spaced parallel fashion upon the flat surface of said member;

each of said conductive members being separated into associated first and second conductor portions having spaced apart adjacent ends defining a gap exposing the surface of said member;

said strip being slidable in a predetermined direction along said flat surface of said insulating member with the surface of said strip bearing said markings engaging said flat surface of said insulating member;

said elongated conductive members being in alignment with the direction of movement of said strip;

resilient means positioned to urge said strip into ultimate engagement with said gap region and the ends of the conductor portions in the immediate region of said gap region;

said markings being formed with an electrically conductive material; and

means for coupling electrical power to said first conductor portions, whereby electrical power is conducted to said second conductor portions when a marking on said strip bridges the gap between associated first and second conductor portions.

15. Apparatus for composing a pattern of parallel lines controlled upon an elongated strip having at least one straight longitudinal edge, comprising:

a composing board having a main recess for receiving and supporting said strip, said recess having one upright side for locating and aligning the said one longitudinal edge of said strip;

an elongated slidable rule extending across said recess;

a pair of transverse recesses arranged on said board and located on opposite sides of the strip moving along said main recess for aligning and slidably receiving said rule, the depths of said grooves extending substantially to the surface of the main recess so that the underside of said slidable rule engages the strip positioned upon said recess and is aligned perpendicular to said one upright side;

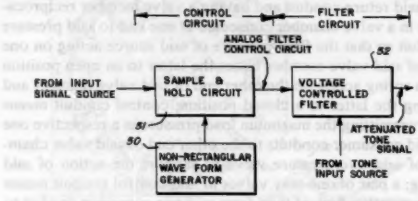
said rule having a narrow elongated slot extending substantially parallel to said one upright side;

detent means for releasably securing said slidable rule at a plurality of equispaced discrete positions to enable said elongated slot to be moved to a plurality of equispaced discrete positions to facilitate the drawing of straight line upon said strip only said equispaced discrete positions by insertion of the tip of a marking instrument into said slot.

4,214,502
SPECIAL EFFECTS CIRCUIT FOR AN ELECTRONIC ORGAN

Robert J. Holpuch, Palatine; Robert G. Mathias, Brookfield, and Alan C. Young, Park Ridge, all of Ill., assignors to Marmon Company, Chicago, Ill.

Continuation of Ser. No. 697,468, Jun. 18, 1976, abandoned.
This application Feb. 7, 1978, Ser. No. 875,847
Int. Cl.[2] G10H *1/02*
U.S. Cl. 84—1.24 3 Claims



1. A special effects circuit for an electronic musical instrument comprising:

a tone signal source having a tone output signal;

an input signal source having an enable output signal;

non-rectangular waveform generator means for producing a continuously varying non-rectangular waveform output signal;

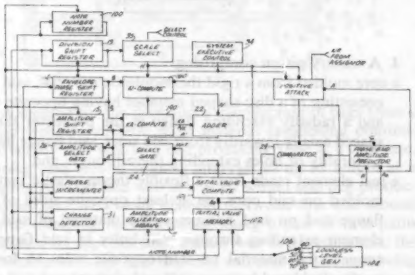
sample and hold circuit means having a control output signal and receiving said continuously varying non-rectangular waveform output signal of said non-rectangular waveform generator means and said enable output signal of said input signal source for sampling the instantaneous signal value of said continuously varying non-rectangular waveform output signal in response to said enable output signal and for holding said sampled instantaneous signal value as said control output signal; and

filter circuit means receiving said tone output signal of said tone signal source and said control output signal of said sample and hold circuit means and having bandpass characteristics dependent upon the value of said control output signal for filtering said tone output signal producing an attenuated tone output signal.

4,214,503
ELECTRONIC MUSICAL INSTRUMENT WITH AUTOMATIC LOUDNESS COMPENSATION

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Mar. 9, 1979, Ser. No. 19,318
Int. Cl.[2] G10H *1/02*
U.S. Cl. 84—1.27 9 Claims

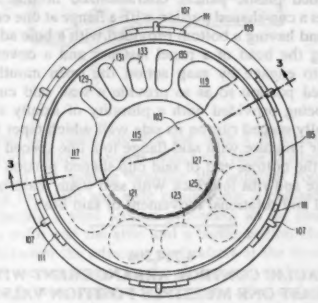


1. An electronic musical instrument comprising: at least one tone generator for generating a musical tone, a keyboard having keys for setting the pitch and initiating a musical tone from the tone generator by operating selected keys, a memory means storing a plurality of data sets, each set comprising a plurality of data values corresponding to the relative amplitudes of points on the constant loudness level curve for the human ear over the frequency range of the instrument, there being a unique value in each set for each key on the keyboard, means including loudness controlling means for selecting one of said sets in the memory means, means responsive to operation of a key on the keyboard for selecting and reading out a corresponding one of said data values from the selected set of values, and means setting the amplitude of the tone generator output in proportion to said data value from memory, said loudness controlling means including switch means for selecting the desired loudness level of the tone generator by selecting one of said sets of values.

4,214,504
COMPOUND DRUM

Leslie A. Rex, 2036 Chestnut St., Philadelphia, Pa. 19103

Filed Apr. 27, 1978, Ser. No. 900,808
Int. Cl.[2] G10D *13/02*
U.S. Cl. 84—411 R 10 Claims



1. A drum comprising:

a cylindrically-shaped housing, one end thereof terminating as a truncated frustroconical-shaped end, comprising a contiguous plurality of percussion chambers whereof:

a first circularly-shaped percussion chamber extends longitudinally through said housing, having an opening onto the flat portion of said truncated frustroconical end;

a pair of kidney-shaped percussion chambers each extend logitudinally through said housing, oppositely positioned about the periphery of said first circularly-shaped chamber, each having an opening thereof onto the tapered portion of said truncated frustroconical end;

a plurality of oblong-shaped percussion chambers extend logitudinally through said housing, each having an opening thereof grouped onto said tapered portion of said truncated frustroconical end, peripherally about said first circularly-shaped percussion chamber, and between said pair of kidney-shaped chambers;

a plurality of small circularly-shaped percussion chambers extending longitudinally through said housing, each having an opening thereof grouped into said tapered portion of said truncated frustroconical end, about the periphery of said first circularly-shaped percussion chamber opposite said plurality of oblong-shaped percussion chambers; and

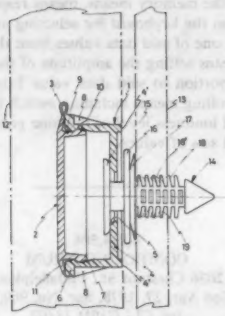
a single drum head completely covering said housing truncated frustroconical-shaped end.

4,214,505

BUSH FOR ANCHORING PANEL FASTENERS

Michele Aimar, Turin, Italy, assignor to ITW Fastex Italia S.p.A., Turin, Italy

Filed Sep. 13, 1978, Ser. No. 942,000
Claims priority, application Italy, Sep. 26, 1977, 22354/77[U]
Int. Cl.[2] F16B 15/02, 19/00
U.S. Cl. 85—55 1 Claim



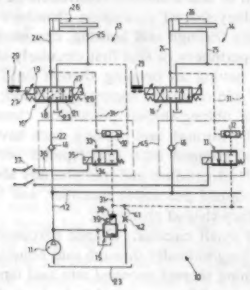
1. A bush adapted for anchoring panel fasteners in foamed or semi-foamed plastic panels, characterized in that the bush comprises a cup-shaped portion with a flange at one end of said portion and having a bottom provided with a hole adapted for anchoring the head of a panel fastener and a cover portion adapted to engage by snap action the open mouth of said cup-shaped portion so as to provide a seal, said cup-shaped portion being provided with a plurality of axially extending peripherally spaced ribs on its side wall which taper inwardly from their juncture with said flange to a line spaced from but adjacent the bottom end of said cup-shaped portion whereby said flange and ribs interlock with said foam material to prevent axial and rotational movement of said bush.

4,214,506

HYDRAULIC CONTROL ARRANGEMENT WITH AT LEAST ONE MULTIPLE POSITION VALVE

Wolfgang Bernhardt, Korntal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,879
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757660
Int. Cl.[3] F15B 11/16, 13/04
U.S. Cl. 91—527 10 Claims



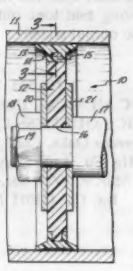
1. A hydraulic control arrangement for at least one hydraulic consumer having a pair of consumer conduits, said hydraulic control arrangement comprising a source of pressure fluid; a tank; a multiple position valve connected to said consumer conduits; an inlet conduit connected by a pressure conduit to said source of pressure fluid and leading to said multiple position valve; an outlet conduit connecting said multiple position valve with said tank, said multiple position valve having a valve slide movable between a plurality of positions and proportional drive means for controlling the positions of said valve slide and therewith the direction and magnitude of flow of pressure fluid from said source to a respective one of said consumer conduits and from the other of said consumer conduits to said tank; an overpressure valve connected upstream of said multiple position valve between said pressure conduit and said return conduit and having a valve member reciprocatable in a valve chamber connected at one end to said pressure conduit so that the fluid pressure of said source acting on one end of said valve member biases the latter to an open position and a spring acting on the other end of said valve member and biasing the latter to a closed position; control conduit means for transmitting the maximum load pressure in a respective one of said consumer conduits to the other end of said valve chamber of said overpressure valve to support the action of said spring; a pair of one-way valves in said control conduit means for preventing flow of fluid from said one consumer conduit to the other of said consumer conduit; a stop valve movable between an open and a closed position in said control conduit means between said one-way valves and said other end of said valve chamber of said overpressure valve; a throttle; a conduit connecting said throttle to said control conduit means between said stop valve and said other end of said valve chamber of said overpressure valve and to said return conduit; and means controlling the position of said stop valve depending on the position of the valve slide of said multiple position valve.

4,214,507

ONE-PIECE PLASTIC PISTON

Jules M. Hock, 16056 Arbela Dr., Whittier, Calif. 90603, and Donald S. de Vries, Jr., 106 Pearl Ave., Balboa Island, Calif. 92662

Filed Aug. 24, 1977, Ser. No. 827,425
Int. Cl.[2] F16J 9/00, 9/08
U.S. Cl. 92—254 9 Claims



1. A unitary piston comprising:

a core molded from a rigid thermoplastic material, said core consisting of a disc-shaped member having opposite sides and a radially extending flange at the perimeter thereof spaced axially inwardly from said sides, said flange having a plurality of holes extending therethrough; and

a seal element made from a flexible thermoplastic material molded on said core, on at least opposite sides of said flange and on said perimeter, the material of said seal element extending through said holes in said flange to connect the material on said opposite sides to form a mechanical bond between said seal element and said core,

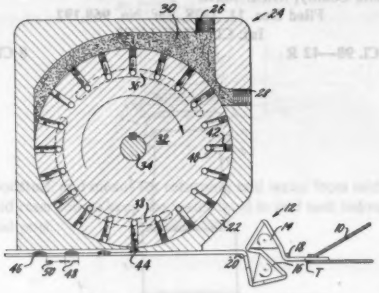
there being no adhesion or chemical bond between said core and said seal element, said mechanical bond being the only means for holding said seal element on said core.

4,214,508

METHOD AND APPARATUS FOR MAKING CIGARETTE FILTERS OF FILAMENTARY MATERIAL

James M. Washington, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Oct. 13, 1977, Ser. No. 841,804
Int. Cl.[2] A24C 5/50; D02J 1/22
U.S. Cl. 93—1 C 21 Claims



1. A method for providing an article of manufacture comprised of elongate filamentary material, including the steps of:

(a) continuously longitudinally advancing said material through an issue location;

(b) continuously longitudinally advancing said material through a take-up location spaced from said issue location; and

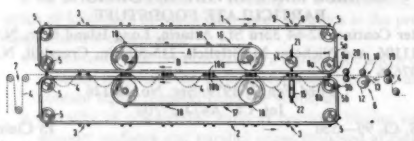
(c) while continuously transporting said material from said issue location to said take-up location, longitudinally stretching selected mutually spaced first portions of said material and simultaneously retaining second portions of said material longitudinally successive to such first portions to prevent stretching of said second portions thereof.

4,214,509

METHOD AND APPARATUS FOR MANUFACTURING BAGS OF A CONTINUOUS WEB OF A THERMOPLASTIC SYNTHETIC SHEET MATERIAL

Leonard Van der Meulen, Immeuble Saadi El Menzah, Appt. 22a, 6ième Etage, Tour A, Tunis, Tunisia

Filed May 25, 1978, Ser. No. 909,578
Claims priority, application Netherlands, May 31, 1977, 7705977
Int. Cl.[2] B31B 1/64, 27/60
U.S. Cl. 93—35 R 42 Claims



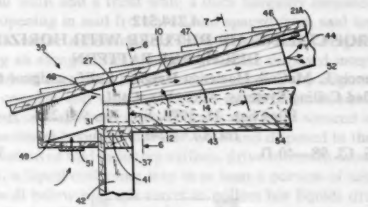
1. A method for the continuous manufacture of bags from a tubular web of synthetic sheet material comprising continuously supply said web to a bag producing zone at a first rate, clamping said web at regular intervals along its length at a clamping zone on said web at a point within said bag producing zone, said web being clamped between first and second pairs of clamping bars travelling along a pair of first paths juxtaposed on opposite sides of said web at a second rate, the relationship between said first rate and said second rate being such that tension in said web is avoided between said pairs of clamping bars, maintaining said web clamped between said pairs of clamping bars as said pairs of clamping bars travel along clamping path portions of said first paths parallel to said web, said clamping path portions having a first predetermined length, perforating said web at a first location on said web proximate to said clamping zone, and heat sealing said web at a second location on said web proximate to said clamping zone by contacting said web with heat sealing means travelling along a heat sealing path portion of a second path parallel to said web, said heat sealing path portion of said second path having a second predetermined length, said second predetermined length being less than said first predetermined length, so that said heat sealing path portion of said second path is contained entirely within and terminates before said clamping path portions of said first paths.

4,214,510

VENT AND BAFFLE UNIT

Bruce K. Ward, 2904 Virginia Ave. South, Minneapolis, Minn. 55426

Filed Sep. 14, 1978, Ser. No. 942,462
Int. Cl.[2] F24F 7/00
U.S. Cl. 98—37 34 Claims



1. A vent and baffle unit for use with a structure having adjacent roof rafters extended from a top plate to support roof structure and an opening between the adjacent roof rafters connecting the soffit and attic comprising: a one-piece sheet member having a vent section providing an air passage between the soffit and the attic and a baffle section closing the opening between the adjacent roof rafters at the forward end of the vent section, except for the air passage, said vent section including a bottom wall having opposite sides and a forward edge, said bottom wall has a generally triangular shape with opposite sides thereof diverging away from the baffle means, side walls articuately joined to the opposite sides of the bottom wall, a first flange articuately joined to one side wall, a second flange articuately joined to the other side wall, said baffle section including a transverse baffle means articuately joined to the forward edge of the bottom wall, said side walls of the vent section being angularly related to the bottom wall to form the vent passage and said first and second flanges being attachable to the roof structure, said baffle means of the baffle section being extended downwardly from the forward edge of the bottom wall to close the opening between adjacent roof rafters below the forward edge of the bottom wall.

4,214,511

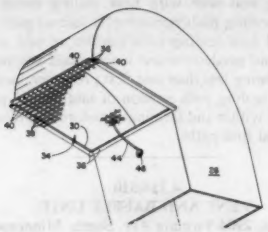
BREAK-AWAY VENT FOR GRAIN STORAGE BINS

Gary E. Mueller, P.O. Box 366, 507 Williams St., Reynolds, Ill. 61279

Filed Jun. 4, 1979, Ser. No. 45,462
Int. Cl.[3] F24F 7/00
U.S. Cl. 98—37 10 Claims

1. In a building structure including an enclosure having a wall provided with an opening and a screen disposed over the opening to afford a vent through which air is caused to flow by the existence of a pressure drop across the vent of a predetermined value resulting from a pressure differential between the interior of the structure and the outside atmosphere, the improvement comprising means for connecting the screen to the

wall for holding the screen in place under conditions at pressure drop at and about the aforesaid value, said means being releasable to release the screen from its position across the opening under conditions in which the screen accumulates



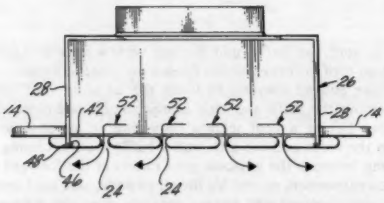
air-borned and like material to such extent as to cause clogging of the screen sufficient to result in a pressure drop across the vent of a value substantially below the aforesaid predetermined value.

4,214,512

DROP CEILING AIR DIFFUSER WITH HORIZONTAL DISCHARGE PATTERN

Francis L. McCall, Hacienda Heights, Calif., assignor to Specified Ceiling Systems, Alhambra, Calif.

Filed Sep. 11, 1978, Ser. No. 941,223
Int. Cl.[2] F24F *13/06*
U.S. Cl. 98—40 D **7 Claims**



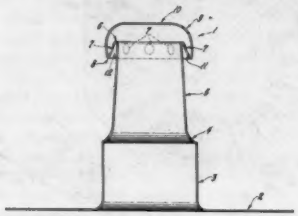
1. An air diffuser assembly comprising a plurality of ceiling panels arranged parallel to each other, each ceiling panel being formed of a flat longitudinal strip of sheet material with both longitudinal edges being turned upwardly in an arc to form arcuate edge surfaces, means supporting the flat ceiling panels in a common plane with gaps providing longitudinal slots between the longitudinal edges of adjacent members, a hood positioned on top of the ceiling panels forming a plenum chamber with the panels into which air is admitted under pressure, the air escaping through from the plenum chamber through the slots, and air deflector members positioned inside the plenum chamber and mounted on one of said longitudinal edges of the ceilng panels, each air deflector member being formed of sheet material formed in cross-section as two planar surfaces joined by an arcuate cylndrical surface, each of the air deflector members being mounted on the respective ceiling members with one planar surface of each deflector member terminating along one edge in tangential relationship to the arcuate edge surface of the associated ceiling panel on which it is mounted, the concave side of the cylindrical surface and the other planar surface of each of the deflection members extending substantially above the slot between the ceiling panels on which it is mounted and the next adjacent ceiling panel and extending in spaced apart but overlapping relation to the next adjacent ceiling panel, whereby air from the plenum chamber passes between the underside of a deflector member and the top of a ceiling panel, around the concave side of the cylindrical surface into tangential flow along the surface of the panel on which it is mounted.

4,214,513

ONE-PIECE ROOF VENT DEVICE AND METHODS OF CONSTRUCTING AND UTILIZING SAME

James W. Ballard, 34934 Elmira, Livonia, Mich. 48150, and Larry R. Ballard, 18633 Negaunee, Redford Township, Marquette County, Mich. 48240

Filed Dec. 11, 1978, Ser. No. 968,192
Int. Cl.[2] F24F *13/08*
U.S. Cl. 98—42 R **8 Claims**



1. A one-piece ventilation apparatus comprising:
a substantially horizontal flat annular base portion;
a generally tubular portion extending integrally upwardly from said base portion;
a first bend portion extending integrally outwardly and downwardly from the upper end of said tubular portion;
a vent-hole portion extending integrally downwardly from said first bend portion;
a second bend portion extending integrally upwardly from said vent-hole portion;
an arcuate cap side portion extending integrally upwardly from said second bend portion;
a substantially horizontal cap top portion extending integrally above said arcuate cap side portion;
said vent-hole portion having a plurality of vent holes provided therein;
said apparatus being entirely integrally and unitarily formed from a single piece of deformable material; and said generally tubular portion comprises:
a lower substantially cylindrical portion extending integrally upwardly from said base portion;
an intermediate arcuate transition portion; and
an upper substantially truncated conical portion.

4,214,514

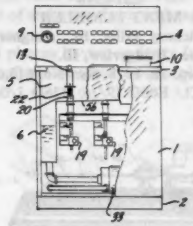
COOKER FOR INDIVIDUAL PORTIONS OF PARTICULATE FOODSTUFF

Peter Contino, 32-64 33rd St., Astoria, Long Island City, N.Y. 11106, and Nicholas M. Stiglich, 215-8th St., Cresskill, N.J. 07626

Filed Feb. 7, 1979, Ser. No. 10,126
Int. Cl.[2] A47J *27/00*
U.S. Cl. 99—330 **13 Claims**

1. Cooker for foodstuff in particulate form in particular pasta, comprising a tank, a plurality of pots in said tank, said pots being individually movable vertically between an upper position and a lower position and being removable from said tank, each of said pots being of a size to receive an individual portion of foodstuff and having an apertured bottom and an apertured side wall, a reservoir for water for use in cooking said foodstuff, means for heating said water to a selected cooking temperature, a water circuit for supplying hot water from said reservoir to said pots under pressure, jet means receiving hot water under pressure from said water circuit and directing it into said pots when in lower position to cook foodstuff therein and to stir said foodstuff by circulation of said hot

water in said pots as said foodstuff is being cooked, said water draining from said pots into said tank during cooking of said



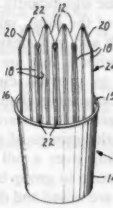
foodstuff, and means for returning said water from said tank to said reservoir to keep the water level in said tank below that in said pots.

4,214,515

DISPOSABLE STRUCTURE FOR USE IN MICROWAVE COOKING

James F. Kubiatowicz, 1630 Rice Creek Rd., Minneapolis, Minn. 55432

Filed Feb. 21, 1979, Ser. No. 14,307
Int. Cl.[2] A47J *37/00*
U.S. Cl. 99—400 **8 Claims**



1. A structure adapted for cooking in a microwave oven strips of food such as bacon that give off liquids in the process, said structure comprising:

a nonmetallic base portion having a top surface and a cavity recessed from said top surface of a size adapted to at least contain liquid released from the strips; and

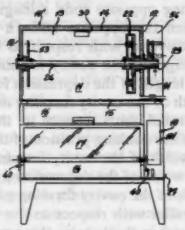
a plurality of nonmetallic support portions having narrow support surfaces and parallel edges disposed at right angles to their support surfaces and joined to each other along said parallel edges to form an assembly adapted to be folded along said edges into a pleated assembly and to be supported on said base portion with said narrow support surfaces generally horizontal and positioned over and spaced from the bottom of the cavity at a distance of at least about one half the length of the strips of food so that strips of food may be hung over said support surfaces with their end portions generally vertically disposed and extending toward said cavity to cause liquid released in the cooking process to be directed into and contained in said cavity.

4,214,516

BARBECUE OVEN

V. L. Friedl, 389-35th Ave., Lachine, Quebec, and B. Mascetti, 8146 Giguere, Lasalle, Quebec, both of Canada

Filed Feb. 8, 1979, Ser. No. 10,608
Int. Cl.[3] A47J *37/04*
U.S. Cl. 99—421 P **13 Claims**



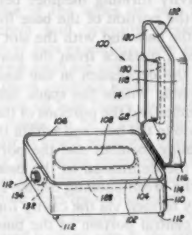
1. A barbecue oven comprising a barbecue compartment defined by vertical spaced apart side walls, a back wall, top and bottom walls and a front wall; a door hingedly mounted in a door opening in said front wall and spaced from said top and bottom walls, a heating unit in said barbecue compartment having an elongate heat radiating surface disposed intermediate said side walls and positioned between a top edge of said door opening and said top wall to radiate heat downwardly towards said spit turret, a spit turret drivingly secured in said compartment between said side walls and disposed in the path of radiation of said radiating surface, drive means to rotate said turret, a liquid collecting tray in at least a portion of said bottom wall below said spit turret to collect hot liquids dripping from foodstuff supported by said spit turret, said spit turret having a rotatable drive shaft having a skewer support disc secured adjacent one end thereof, a disc-shaped drive drum secured adjacent the other end thereof, said drive drum having a plurality of skewer engaging sockets therein disposed in a circumferential axis of a front face thereof with their long axis parallel to said drive shaft; each said socket being secured to a planetary gear rotatably driven by a drive gear secured to said rotatable drive shaft to cause rotation of said sockets, said drive drum housing said drive and planetary gears therein; each said socket being secured in a pressure seal bearing arrangement.

4,214,517

BREAD COOKING DEVICE

Oscar D. Caldwell, 2420 SW. 32 St., Oklahoma City, Okla. 73119

Filed Mar. 3, 1978, Ser. No. 882,973
Int. Cl.[3] A21B *5/02*
U.S. Cl. 99—428 **10 Claims**



1. A bread cooking device for making a bun from breadstuff, comprising:

a base having an upper surface and a depression formed in the upper surface for receiving breadstuff, a portion of the

depression intersecting the upper surface of the base and the depression having a length, a width and a depth; and

a die having a portion positionable within a portion of the depression formed in the base in a cooking position of the bread cooking device, the die comprising:

a cavity forming member positionable within a portion of the depression formed in the base in the cooking position of the bread cooking device, the cavity forming member having opposite ends, a length extending generally between the opposite ends, a width extending generally transverse with respect to the length and a depth, the length of the cavity forming member being less than the length of the depression formed in the base and the length of the cavity forming member extending generally parallel with respect to the length of the depression in the cooking position of the bread cooking device, the width of the cavity forming member being less than the width of the depression formed in the base and the width of the cavity forming member extending generally parallel with respect to the width of the depression formed in the base in the cooking position of the bread cooking device, the depth of the cavity forming member being less than the depth of the depression formed in the base and the depth of the cavity forming member extending generally parallel with respect to the depth of the depression formed in the base in the cooking position of the bread cooking device;

a slot forming member connected to the cavity forming member and extending a distance therefrom and being positionable within a portion of the depression formed in the base in the cooking position of the bread cooking device, the slot forming member having opposite ends, a length extending generally between the opposite ends, a width extending generally transverse with respect to the length and a depth, the length of the slot forming member being less than the length of the depression formed in the base and the length of the slot forming member extending generally parallel with respect to the length of the cavity forming member, the width of the slot forming member being less than the width of the cavity forming member extending generally parallel with respect to the width of the cavity forming member, the depth of the slot forming member extending generally parallel with respect to the depth of the cavity forming member; and

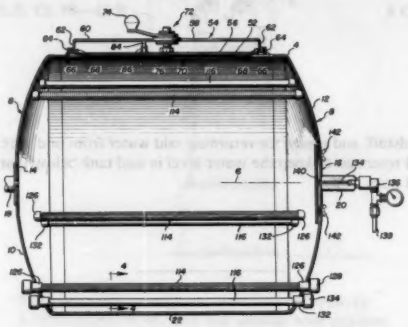
a die support for supporting the cavity forming member and the slot forming member in a predetermined position disposed within a portion of the depression formed in the base in the cooking position, a portion of the slot forming member being connected to the die support and extending a distance from the die support and the cavity forming member being connected to a portion of the slot forming member generally opposite the portion of the slot forming member connected to the die support, the die support positioning the cavity forming member within a portion of the depression formed in the base with the cavity forming member being spaced a distance from the portion of the base formed via the depression in the base and with the slot forming member being spaced a distance from the portions of the base formed via the depression in the base, the breadstuff being disposable within the space between the cavity forming member and the portions of the base formed via the depression in the base and within the space between the slot forming member and the portions of the base formed via the depression in the base in the cooking position of the bread cooking device for forming a bun with a cavity formed via the cavity forming member in a generally central portion of the bun and with a slot formed via the slot forming member extending through a portion of the bun, the slot in the bun intersecting a portion of the bun and extending a distance through a portion of the bun and intersecting a portion of the cavity in the bun, thereby forming a bun with closed ends wherein each closed end extends a distance along one surface of the bun toward the slot formed by the slot forming member.

4,214,518

MEAT TUMBLER

Lee E. Petsche, Hickory Hills, Ill., assignor to Foldenauer Equipment Co., Inc., Bridgeview, Ill.

Filed Sep. 15, 1975, Ser. No. 613,056
Int. Cl.[2] E05C *19/18*; B26D *3/08*
U.S. Cl. 99—535 **9 Claims**



1. Meat tumbling apparatus comprising a drum rotatable about a substantially horizontal axis, said drum having an opening therein, a door for closing said opening to permit loading and unloading of pieces of meat into and from the drum, means on the drum providing a multiplicity of teeth exposed to the inside of the drum, and means for raising pieces of meat in the drum above said axis and then allowing the meat to drop downwardly onto said teeth as the drum is rotated about said axis; said teeth being of such size and configuration as to form a mass of small cuts in the surfaces of the pieces of meat sufficient to increase significantly the exposure of myosin protein at the surfaces of the meat, said means for providing said multiplicity of teeth and said means for raising the pieces of meat comprising members that are radially outwardly of said axis and located to provide circumferentially spaced groups of teeth and meat raising elements, the teeth of each group being presented generally toward said axis, the circumferential disposition of the groups of teeth and of said meat raising elements extending over a full circle of rotation and with the spacing from group to group being less than 180° and such that pieces of meat are raised and dropped downwardly in the order of one-half a revolution of drum rotation, and in which the members comprise rods that extend generally parallel to said axis.

4,214,519

HORIZONTAL FRUIT PRESS AND PROCESS FOR PRESSING FRUIT

Hubert C. Stollenwerk, and Hubert F. Stollenwerk, both of Darnstadt Ave., Egg Harbor City, N.J. 08215

Continuation-in-part of Ser. No. 789,729, Apr. 21, 1977, abandoned. This application Feb. 1, 1979, Ser. No. 8,402
Int. Cl.[3] A47J *19/02*; B30B *5/00*
U.S. Cl. 100—37 **6 Claims**

1. An apparatus for deliquifying compression material comprising:

(a) a frame;

(b) a rigid cage fixidly mounted on said frame;

(c) said cage comprising a pair of sides a bottom, vertically extending parallel open front and back ends and a slidable, sealable top providing an opening for the introduction of compressible material;

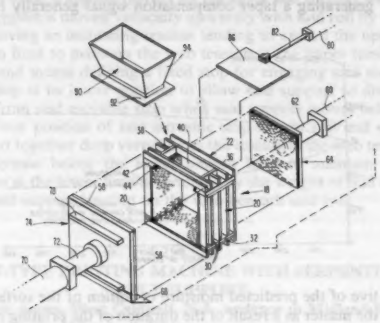
(d) a first press platen substantially sealingly and slidably

mounted in one end of said cage and adapted to be displaced to the other end of said cage;

(e) a second backup platen substantially sealingly, slidably mounted in the other end of said cage and adapted to be displaced out of and away from said cage in opposition to said first platen;

(f) each of said platens having an inner face;

(g) at least one of said platens having a plurality of alternating movable and non-movable members comprising said inner face and defining a liquid channel therebetween, said liquid channel extending through said platen to permit drainage of liquid into and away from said platen;



(h) means for displacing said movable portion of said platen with respect to said non-movable portion during a part of the cycle of movement of said platen, whereby said movement has the effect of self-cleaning of any solid material which may become entrapped in said channel.

4,214,520

PUNCH FOR PUNCHING MARKINGS INTO ROLLED MATERIAL

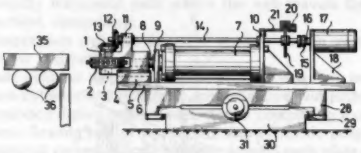
Horst E. Eissel, Solingen, Fed. Rep. of Germany, assignor to Stommel & Voos Stahlstempelfabrik, Solingen, Fed. Rep. of Germany

Filed Jul. 10, 1978, Ser. No. 923,415

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1977, 2731849

Int. Cl.[2] B41J *1/38;* B41F *17/24*

U.S. Cl. 101—4 **4 Claims**



1. A punch for punching a succession of different markings into rolled material such as bars, ingots, billots or slabs, comprising

(a) a tool holder;

(b) a substantially vertical rotatable drive shaft mounted on said tool holder;

(c) a punch plate mounted on said drive shaft for rotation therewith and having a plurality of punch types thereon;

(d) first support means mounting said tool holder for movement along a substantially horizontal path;

(e) controlled means for reciprocating said tool holder along said substantially horizontal path between punching and rest positions;

(f) rotary stepping drive means on said first support means;

(g) a substantially horizontal rotatable drive shaft extending from said stepping drive means to said tool holder;

(h) a pair of meshing bevel gears, one mounted on said substantially vertical drive shaft and the other mounted on said substantially horizontal drive shaft for rotation therewith and adapted to freely move axially along said horizontal drive shaft with movement of said tool holder along said horizontal path;

(i) second support means mounted on said first support means for movement along a path transverse to said substantially horizontal path of said tool holder;

(j) means for moving said first support means along said transverse path; and

(k) control means for operating said means for moving said first support means an incremental distance along said transverse path each time said tool holder returns from said punching position to said rest position;

(l) whereby said punch plate may be rotated by said rotary stepping drive means and advanced laterally by said means for moving said first support means after each punching operation to punch a succession of different markings into said rolled material.

4,214,521

ROLLING PARALLEL PRINTER

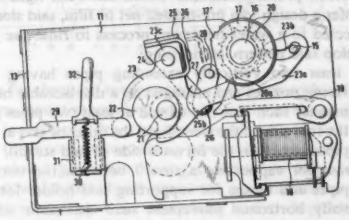
Helmut Gelling, Wangen, Switzerland, assignor to Firma Precisa AG Rechenmaschinenfabrik, Zurich, Switzerland

Filed Feb. 2, 1978, Ser. No. 874,555

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1977, 2705435

Int. Cl.[2] B41J *1/44*

U.S. Cl. 101—96 **9 Claims**



1. In a rolling parallel printer of the type comprising a frame, a first shaft mounted to said frame, a plurality of type wheels mounted on said first shaft in side-by-side fashion, said first shaft being rotatable to displace types on said type wheels to specific positions, a pressure element including a curved pressure segment mounted on said frame and adapted for connection to drive means to be driven through one periodic swiveling motion each printing cycle for pressing a paper strip and ribbon against a line of the types on said type wheels, the improvement wherein said pressure element comprises a bridge including lever legs extending from both sides thereof; a pair of rocking arms; each leg connected to one of said rocking arms by a first pivot coupling located adjacent said bridge; a drive shaft mounted on said frame and adapted for connection to the drive means to be rotated one revolution each printing cycle, a pair of crank members mounted on said drive shaft, each rocking arm being mounted to one of said crank members; a crossbar mounted on said frame, each rocking arm including a slot which receives said crossbar, the length of said slot being about twice the length of said crank member and arranged to guide said rocking arm as the latter is displaced by said crank member toward a foremost position in which said pressure segment rolls off said line of types, a pair of levers each pivoted at one end to said frame and at another end to one of said legs at a location spaced from said first pivot coupling; said crank member, rocking arm, leg, and lever defining linkage means for displacing said pressure segment in an elliptical

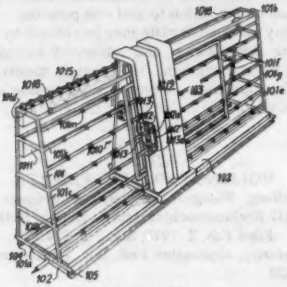
path of travel toward and away from the type wheels wherein said pressure segment is oriented parallel to the line of types throughout travel of said segment in said elliptical path and rolls off a line of types when the rocking arm is in said foremost position.

4,214,522

DEVICE FOR MANUFACTURING A STENCIL

Dag Bille, Särö, Sweden, assignor to Svecia Silkscreen Maskiner AB, Norsborg, Sweden

Filed Apr. 25, 1978, Ser. No. 899,859
Claims priority, application Sweden, May 16, 1977, 7705695
Int. Cl.[2] B41C *1/14*
U.S. Cl. 101—128.4 **19 Claims**



1. An apparatus for treating a stencil intended for use in a silkscreen printing machine which has been light-treated to transfer a design to a pre-treated net or film, said stencil being subjected to a water-treatment process to rinse the stencil to develop said pattern, comprising:

at least two vertically extending pipes having mutually facing nozzles and arranged on a displaceable holder in a manner such that one of said at least two pipes passes on the rear side of the stencil and the other of said at least two pipes passes on the forward side of said stencil,

means for supporting a stencil between the two vertical pipes and means for supporting said holder for substantially horizontal movement such that each side of the stencil will be respectively traversed by said pipes, and

means for supplying water to said pipes to treat a stencil supported on said supporting means.

4,214,523

INK AND MOISTURE CONTROL WITH MASTER CONDITION COMPENSATION

Saied A. Mabrouk, 9176 Shepard Rd., Macedonia, Ohio 44056; Edward T. Morgan, 8330 Westmoor Rd., Mentor, Ohio 44060, and James W. Davis, 624-B Corkhill Rd., Apt. 612, Bedford, Ohio 44146

Continuation of Ser. No. 820,825, Aug. 1, 1977, abandoned. This application Sep. 27, 1978, Ser. No. 946,522
Int. Cl.[2] B41F *7/24*; B41L *25/00, 27/00*
U.S. Cl. 101—148 **3 Claims**

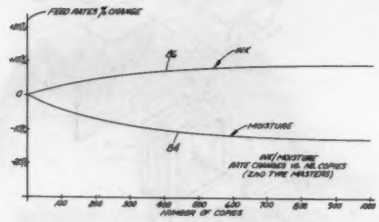
1. In a lithographic duplicator for printing copies from a sequence of masters, each inserted in turn on a master cylinder of the duplicator, which duplicator includes moisture supply means for supplying moisture to a master on the cylinder and ink supply means for supplying ink to a master on the cylinder, and in which the masters inserted upon the master cylinder are of a nature such that they gradually absorb moisture with continued use, whereby the moisture condition of the surface of each master is subject to progressive change during a printing run, a control system comprising:

moisture control means for providing an underlying moisture feed rate control signal, said moisture control means being connected with the moisture supply means and controlling the same via said signal,

means for sensing the introduction of a new master and generating a first signal indicative of that effect,

means for generating a second signal indicative of the number of copies which have been printed since the initiation of the printing run with each master, and

circuit means responsive to said first and second signals for generating a taper compensation signal generally indicative of the predicted moisture condition of the surface of the master as a result of the duration of the printing run in progress,



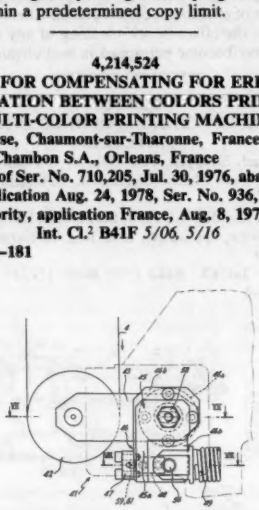
said moisture control means being responsive to said compensation signal to automatically adjust the moisture feed rate control signal delivered by it to said moisture supply means in a manner to gradually decrease the moisture feed rate of the moisture supply means as the number of copies printed during the printing run in progress increases, at least within a predetermined copy limit.

4,214,524

SYSTEM FOR COMPENSATING FOR ERRORS IN REGISTRATION BETWEEN COLORS PRINTED IN MULTI-COLOR PRINTING MACHINE

Louis G. Corse, Chaumont-sur-Tharonne, France, assignor to Machines Chambon S.A., Orleans, France

Continuation of Ser. No. 710,205, Jul. 30, 1976, abandoned. This application Aug. 24, 1978, Ser. No. 936,198
Claims priority, application France, Aug. 8, 1975, 75 24771
Int. Cl.[2] B41F *5/06, 5/16*
U.S. Cl. 101—181 **4 Claims**



1. In a multi-color printing machine including a series of printing units through which a web successively passes for successively printing on the web with different colors, a system for maintaining printing of different colors on the web in registration, comprising: compensating means responsive to a control signal for adjusting the relative position of the web and one of said printing units to compensate for registration error between printing by said one printing unit and printing by another printing unit; means for detecting the registration error and for applying the control signal to said compensating means in response to the detected registration error to operate said compensating means to compensate for the detected registration error; and tension limiting means effective for limiting a

tension in the web to an upper tension limit and a lower tension limit when the tension in the web tends to exceed these limits, said tension limiting means comprising a horizontal roll movable in a vertical direction with the web passing under the roll, a support mounting said roll for rotation thereon and movable in a vertical direction with said roll, means defining a movable stop having a lower position and movable in an upward vertical direction when an upwardly directed force exceeding a certain value is applied thereto for engaging said support when said support is moved vertically upwardly with said roll by the web having an increasing tension tending to exceed the upper tension limit to maintain the web tension at the upper tension limit, and means defining a fixed stop for engaging said movable stop at its lower position to allow said support to disengage from said movable stop when said support moves below the lower position of said movable stop as said roll and said support together drop vertically as the tension in the web tends to decrease below the lower tension limit to maintain the tension at the lower limit determined by the weight of said roll and said support bearing on the web beneath said roll.

4,214,525

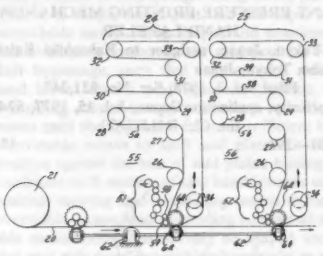
BELT-TYPE PRINTING MACHINE WITH SERPENTINE BELT SUPPORT

Charles Aaron, West Caldwell, N.J., assignor to Midland-Ross Corporation, Cleveland, Ohio

Continuation of Ser. No. 836,130, Sep. 23, 1977, abandoned, which is a continuation of Ser. No. 679,930, Apr. 26, 1976, abandoned. This application Nov. 13, 1978, Ser. No. 960,220

Int. Cl.³ B41F *5/06, 5/16, 17/02*

U.S. Cl. 101—181 **4 Claims**



1. A belt printing machine which is especially adapted for multi-tone printing on a single web and has a plurality of horizontally spaced printing stations spaced progressively along a substantially horizontal path which the web travels through the machine, comprising:

an impression cylinder disposed at each station vertically below said path;

a plate cylinder disposed in close proximity to each impression cylinder and vertically spaced above said path;

a separate printing belt for each station comprising a continuous flexible belt of non-stretchable synthetic polymeric material reeved at least partially around each plate cylinder and extending therefrom, each belt carrying a plurality of printing plates for printing on the web as it passes between the impression cylinder and plate cylinder at each station;

separate printing belt supporting apparatus at each station in overhead relation to said path and plate cylinders comprising, (i) rotatable cylindrical means supported along a plurality of parallel axes located in horizontally parallel passes of a belt of consecutively reversed turns along a portion of a complete circuit for its respective belt within a box-shaped region spaced vertically above said path and plate cylinders, and (ii) other rotatable cylindrical means supported along a plurality of parallel axes defining another portion of said complete circuit surrounding a peninsular region projecting substantially vertically from said box-shaped region toward said path and terminating distally at each plate cylinder, the peninsular region being located and sized relative to the box-shaped region such that a dihedral region is formed therebetween to accommodate an ink train and personnel;

positive belt-driving means in coaxial adjacent relation with said plate cylinders at opposite ends of said plate cylinders in positive drive relation with opposite edges of the belt; and

common drive means for all of said belt-driving means and said impression cylinders effecting accurate synchronization of the belt speeds and the web speed.

4,214,526

DRIVE FOR SHEET-FED ROTARY PRINTING PRESSES WITH AT LEAST TWO TANDEM-MOUNTED PRINTING UNITS

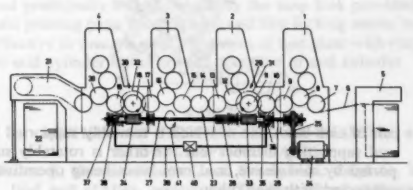
Willi Jeschke, Heidelberg-Boxberg, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Fed. Rep. of Germany

Division of Ser. No. 496,169, Aug. 9, 1974, Pat. No. 4,112,842. This application Jun. 30, 1978, Ser. No. 921,080

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1973, 2340263

Int. Cl.² B41F *5/02*

U.S. Cl. 101—183 **2 Claims**



1. Drive for sheet-fed rotary printing machines with at least two tandem-mounted printing units driven by a closed gear train and including a drive motor comprising a drive train driven by the motor and extending parallel to the closed gear train, the closed gear train having at least two force input locations at which the closed gear train is connected to said drive train, said drive train comprising a first displaceably mounted transmission unit connected to the closed gear train at one of said force input locations, a second transmission unit corresponding to said first unit connected to the closed gear train at the other of said force input locations, and transmission means connecting said first transmission unit to said second transmission unit, said drive train being constructed as a bipartite main drive shaft, both parts of said main drive shaft being coupled to one another so as to be displaceable relative to one another in axial direction, said transmission units including a worm respectively secured to each part of said main drive shaft and a worm gear respectively meshing with each of said worms at a respective force input location, each of said main drive shaft parts being mounted in respective bearings so as to be axially displaceable.

4,214,527

MOUNTING ARRANGEMENT FOR A PLATE CYLINDER AND FORM ROLLERS

Hiroyoshi Kamota, Kashiwa, Japan, assignor to Kormori Printing Machinery Co., Ltd., Tokyo, Japan

Filed Jan. 3, 1979, Ser. No. 672

Int. Cl.² B41F *31/34, 13/14, 13/28;* **B41L** *27/36*

U.S. Cl. 101—247 **4 Claims**

1. A printing press comprising:

a pair of spaced frames;

a supporting member having a portion whose outer surface is rotatably supported by one of said frames and being

provided with a shaft hole formed eccentrically with respect to said outer surface;

a plate cylinder having a concentric shaft rotatably supported at one end in the shaft hole of said supporting member and the other end in a sleeve secured to the other frame;

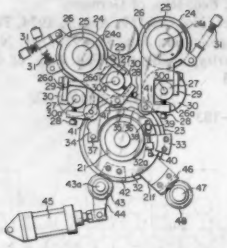
means for rotating said supporting member so that the axis of said plate cylinder may be skewed;

vibrating rollers journalled in the frames;

form rollers engageable with said plate cylinder and said vibrating rollers;

pairs of roller holders swingably mounted around both end portions of said vibrating rollers, each of said form rollers being journalled in respective one of said pairs of roller holders;

means attached to each of said roller holders for urging said roller holder in the direction to press its form roller against said plate cylinder;



a pair of cam bases one of which is rotatably supported by said supporting member and the other is rotatably supported by said sleeve, said cam bases being operatively connected with each other;

arcuate cams provided on each cam base, rotatable therewith and equal in number to the number of said form rollers, each of said cams being swingably supported at one end to said cam base, having a cam surface adapted to be engaged with a portion of respective one of said roller holders and being adjustably fixed at the other end to said cam base, each of said cam surfaces including a crest and an arcuate root with which said portion of each roller holder is engaged during printing operation; and

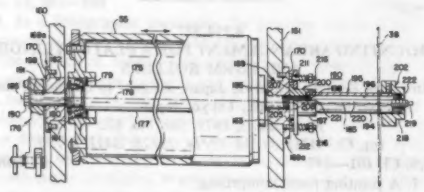
means for simultaneously rotating said pair of cam bases so that said portion of each of said roller holders is engaged by said crest of respective one of said cams, whereby said form rollers are simultaneously thrown-off from said plate cylinder.

4,214,528

PLATE CYLINDER SIDE REGISTER ADJUSTMENT

George Mirow, Worcester, Mass., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Aug. 25, 1978, Ser. No. 936,825
Int. Cl.[3] B41F *7/08, 13/14, 31/30*
U.S. Cl. 101—248 **8 Claims**



1. In an offset printing press having a cylinder rotatable on a generally nonrotative axially movable shaft concentric with the cylinder and mounted on a mainframe, a mechanism for adjusting the axial position of the shaft and the cylinder which rotates on it, comprising:

an elongated rotatable spindle having a shaft engaging end and an operator-accessible distal end, the shaft engaging end of the spindle being threaded to mate with a corresponding threaded end of the nonrotative axially movable shaft, the spindle being generally translationally nonmovable along its axis of rotation, the spindle and the shaft extending along generally separate lengths of a common longitudinal axis;

a circumferential flange extending radially from the spindle, the circumferential flange providing a first annular area rotative surface concentric with the axis of rotation of the spindle and generally in a plane perpendicular to the spindle axis of rotation;

a ringlike member mounted to the mainframe and adjacent the flange and concentric relative to the spindle, the member providing a second annular area nonrotative surface concentric with the axis of rotation of the spindle and generally in a plane perpendicular to the spindle axis of rotation, the first and second surface being frictionally engaged; and

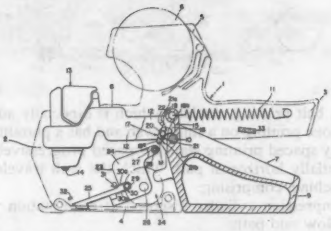
biasing means for maintaining a predetermined degree of friction between the surfaces, the friction being limited to permit resistive rotational movement of the first surface relative to the nonrotative second surface, rotation of the spindle causing translational movement of the nonrotating shaft along its axis.

4,214,529

CONSTANT PRESSURE PRINTING MECHANISM FOR HAND LABELER

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan

Filed Jul. 3, 1978, Ser. No. 921,247
Claims priority, application Japan, Jul. 15, 1977, 52-084203
Int. Cl.[2] B41J *5/00*
U.S. Cl. 101—291 **15 Claims**



1. A constant pressure printing mechanism for use with a hand labeler which is operative to print a label, comprising:

a frame;

a hand lever mounted on said frame for movement between a released position and a squeezed position;

a printing platen having a printing surface; said platen being mounted to said frame for movement between a normal biased position, which occurs when said hand lever is at said released position and is moving toward said squeezed position thereof, and an awaiting position at which said platen is moved such that its said printing surface is awaiting the printing operation, which occurs when said hand lever is moved into the vicinity of said squeezed position thereof; platen biasing means for biasing said platen to said biased position thereof;

a printing head connected to said hand lever and movable thereby between an inoperative position, which is apart from said platen when said platen is at said biased position and when said hand lever is at said released position, and a printing position, at which said printing head is abutting

said platen when said platen is at said awaiting position and when said hand lever is in the vicinity of said squeezed position;

constant pressure means responsive to the operation of said hand lever for moving said platen toward said printing head against the bias of said platen biasing means as said hand lever approaches said squeezed position; said constant pressure means including overridable means carried by said platen and further including overriding means carried by said hand lever and being engageable with said overridable means when said hand lever is moving toward said squeezed position thereof; said overriding means comprising an element which is normally spring biased to a side of said hand lever with respect to the path of motion of said hand lever between said squeezed and said released positions thereof; as said hand lever is being moved toward said squeezed position thereof, said overriding means element abutting said overridable means; said element being biased to a position at which said element prevents bypassage of said overridable means; said overridable means including a first taper surface formed on said platen which tapers in a direction such that as said hand lever moves toward said squeezed position thereof, said first taper surface urges said element to move in a direction which increases the spring bias thereupon;

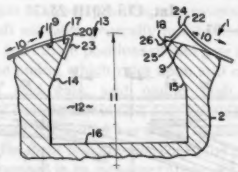
spring biasing means for biasing said overriding means element to its said position at which it prevents bypassage of said overridable means; said pring biasing means being adapted to exert sufficient spring biasing force for causing said platen to be moved to said awaiting position thereof as said hand lever is moved toward said squeezed position after said overriding means has engaged said overridable means, instead of said spring biasing means permitting said element to simply move past said first taper surface; said overridable means being shaped and positioned to move said overriding means out of said position for blocking their bypassage, such that further such motion of said hand lever toward said squeezed position moves said overriding means to apply pressure to said overridable means until the applied pressure is sufficient to cause said overridable means to shift said platen to said awaiting position against the bias of said platen biasing means, and continued such motion of said hand lever to said squeezed position moving said overriding means to ride over said overridble means; said overriding means and said overridable means being respectively so shaped and positioned that said ride over occurs simultaneously as said printing head comes into abutment contact with said platen at said platen awaiting position, whereby the printing pressure to be applied by said printing head to said platen is determined at a constant level in terms of the force which is required to be applied to said hand lever for said ride over.

4,214,530

METAL PRINTING PLATE

John A. Signorelli, 12348 Bennington, St. Louis, Mo. 63141, and Gary C. Glanzner, 5083 Town Center Dr., St. Louis, Mo. 63128

Filed Feb. 23, 1978, Ser. No. 880,459
Int. Cl.[2] B41F *27/12*
U.S. Cl. 101—415.1 **11 Claims**



1. In a plate lock up for a thin metal printing plate including a plate cylinder having at least one axially extending radial slot formed in the surface thereof, said slot being defined by a first surface, and a second surface oppositely opposed to said first surface, said cylinder having a cylinder peripheral dimension between a first edge and a second edge of said slot, the improvement comprising a preformed printing plate of metallic material having a leading edge and a trailing edge, the leading edge having an inwardly directed bend at least as great as ninety degrees so as to seat said first bend against said first surface, said trailing edge having a second inwardly directed bend at an axial distance from said first bend corresponding to the peripheral dimensions of said cylinder, said second bend being at least as great as ninety degrees so as seat said second bend against said second surface, and a third bend outboard of said second bend and formed in a direction opposite to said second bend, the portion of said plate outboard of said third bend defining a lead in for said plate permitting said plate to be snap locked into position on said cylinder, said lead in of said plate being spaced from said second surface while the entire remaining portion of said plate abuts some portion of said cylinder in the running condition of said cylinder, the distance between said first bend and said second bend being no greater than the peripheral dimension of said cylinder between the first and second edges of said slot, said first, second and third bends of said plate and the distance between said first and said second bends defining first means for locking said plate to said cylinder, said plate being snap locked in position on said cylinder and positionally locked thereto by the snap lock provided by said printing plate construction, said first locking means being effective to prevent axial movement of said plate with respect to said cylinder in the normal operation of said cylinder.

4,214,531

METHOD OF TREATING IMAGE-BEARING LITHOGRAPHIC PLATES

Walter L. Garrett, Freeland, and Czerepinski, Ralph G., Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 763,262, Jan. 27, 1977, which is a continuation-in-part of Ser. No. 586,455, Jun. 12, 1975, abandoned, which is a continuation-in-part of Ser. No. 565,915, Apr. 7, 1975, abandoned. This application May 25, 1979, Ser. No. 42,643
Int. Cl.[2] G03F *7/02*; B41N *1/00*; B41M *5/00*
U.S. Cl. 101—451 **9 Claims**

1. A method for the treatment of a developed image-bearing lithographic printing plate to render hydrophilic the non-image areas of the plate, comprising applying to the image-bearing plate an emulsion having an aqueous phase comprising water and an active polymer component selected from the group consisting of:

(a) a polyacrylamide-based polymer wherein from about 5 to about 70 percent of the carbonyl sites are carboxyl groups and the balance of said sites are amide moieties;

(b) a physical blend comprised of from about 95 to about 30 weight percent polyacrylamide and from about 5 to about 70 weight percent polyacrylic acid or an alkali metal or ammonium salt thereof;

(c) a physical blend comprised of polyacrylamide, or polyacrylic acid or an alkali metal or ammonium salt thereof, and at least one polyacrylamide-based polymer as described in (a), said polymers being employed in proportions such that of the total carbonyl sites present in the blend, from about 5 to about 70 percent are carboxyl groups and the balance are amide moieties;

(d) a mixture of any two or more of the foregoing (a)–(c); the weight average molecular weight of each of said polyacrylamide-based polymer, polyacrylamide, and polyacrylic acid or salt thereof being in the range of from about 10,000 to about 500,000; and

(e) a co-mixture of one or more of the foregoing (a)–(d) with up to 30 weight percent hydroxypropyl methylcellulose based on the total weight of the co-mixture, said hydroxypropyl methylcellulose being of a type which produces a

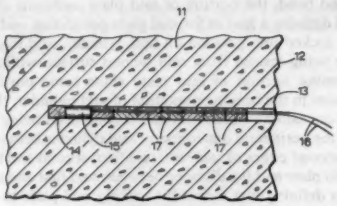
2 weight percent aqueous solution having a viscosity of from about 1 to about 100 cP when measured according to ASTM Method D 2363-72;

said solution being applied in an amount sufficient to render substantially all the non-image areas hydrophilic.

4,214,532
STEMMING

Bryon T. Oulsnam, Stoke-on-Trent, England, assignor to Coreplugs Limited, Stoke-on-Trent, England

Filed May 15, 1978, Ser. No. 905,949
Int. Cl.[2] F42D *1/08*
U.S. Cl. 102—30 **7 Claims**

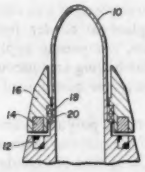


1. A method of stemming comprising the steps of forming a stemming plug of a self-supporting body consisting at least principally of sand bound with the aid of sodium silicate, adding water to the stemming plug to weaken the same prior to its insertion into a shot hole, inserting said weakened plug into said shot hole and thereafter crushing or disintegrating said weakened plug in said shot hole.

4,214,533
ANNULAR ALTERNATOR FOR ARTILLERY

Jonathan E. Fine, Silver Spring, Md., and Clinton J. Sewell, Beloit, Kans., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 2, 1978, Ser. No. 911,750
Int. Cl.[3] F42C *11/04*
U.S. Cl. 102—209 **5 Claims**



1. The combination of a projectile of relatively small diameter and power generating means capable of providing electrical power of at least 15 watts to a circuit of the projectile, the combination comprising;

a stator means secured to a stationary portion of said projectile, said stator comprising an annular coil and a high magnetic permeable toroid surrounding said coil,

said toroid having a substantially rectangular cross section at any circumferential portion thereof, two opposed sides of said cross section comprising two continuous annular walls of high permeable magnetic material, a third side of said cross section comprising a third continuous annular wall of high permeable magnetic material which connects said two opposed sides along a first edge of each, and a fourth side of said cross section comprising discontinuous wall portions of high permeable magnetic material spaced about the circumference thereof, said discontinuous wall portions being attached to said two opposed sides of said cross section along a second edge of each said opposed side, alternate discontinuous portions being attached to opposite ones of said opposed sides,

rotating means secured to said projectile,

impeller means on said rotating means to impart rotary motion thereto in response to air flow over the surface of the projectile, and

a rotor on said rotating means comprising an annular keeper composed of high permeable magnetic material,

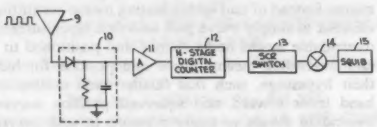
individual permanent magnets embedded in said annular keeper and spaced from one another in a circumferential direction, said magnets each having one pole thereof facing said fourth side of said toroid of said stator, wherein alternate magnets along the circumference of said keeper having opposite poles facing said toroid,

whereby rotation of said rotor relative to said stator in response to air flow over the surface of said projectile during flight thereof is sufficient to generate at least 15 watts of electrical power.

4,214,534
COMMAND FUZING SYSTEM

Arnold A. Richter, Kensington, and Charles E. H. Edwards, Bethesda, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 30, 1969, Ser. No. 839,797
Int. Cl.[2] F42C *11/06*
U.S. Cl. 102—215 **3 Claims**



1. A command fuzing system comprising:

(a) A weapon capable of firing projectiles:

(b) a pulse radar transmitter having a variable pulse rate and located adjacent said weapon for transmitting pulses along the trajectory of said projectiles;

(c) projectiles capable of being fired from said weapon;

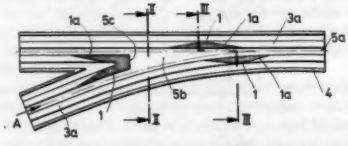
(d) means in said projectiles to count each of said pulses and to cause detonation upon receipt of a predetermined number of said pulses; and

(e) a bar handle located on said weapon for adjusting the pulse repetition frequency of said radar transmitter in order to change the point along the trajectory at which detonation occurs.

4,214,535
SWITCH FOR A SUSPENDED RAILWAY VEHICLE

Thomas Gerhard, Viersen, Fed. Rep. of Germany, assignor to Waggonfabrik Uerdingen A.G., Krefeld, Fed. Rep. of Germany

Filed Sep. 25, 1978, Ser. No. 946,448
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743316
Int. Cl.[2] E01B *25/26*
U.S. Cl. 104—91 **8 Claims**



1. A switch for a suspended railway vehicle having two

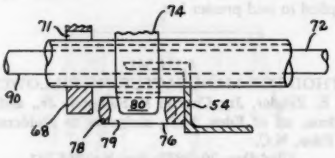
elastic wheels, comprising a first, second, third and fourth rail, said first and second rails together forming a first double-rail path whereas said first rail with said third rail and said second rail with said fourth rail form second and third double-rail paths, respectively, which branch off from said first path, said four rails having contact surfaces and together bounding a gap so that during running of the vehicle on the switch from one to another path one wheel of the vehicle enters the gap and runs without support and after passing said gap the one wheel engages with a portion of one rail of the other path; a plurality of ramps each arranged on a respective one of said portions and having a contact surface provided with means for increasing surface contact of a wheel of the vehicle with each ramp, said surface contact increasing means including, on the contact surface of each ramp, a section which is inclined in a direction transverse to the direction of elongation of the respective rail so that when the one wheel after passing said gap runs onto a respective one of said ramps it is raised onto said contact surface of the one rail of the other path, said surface contact increasing means further including, on the contact surface of each ramp, a transitional portion merging into the respective rail with a transverse inclination which decreases proceeding in the direction along which the transitional portion merges into the respective rail.

4,214,536

HOPPER OUTLET HAVING VERTICALLY MOVABLE DOOR BEARING

Jerry D. Waddell, O'Fallon; John J. Scheeter, and David A. Stoller, both of St. Charles, all of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Oct. 26, 1977, Ser. No. 845,603
Int. Cl.[2] B61D *7/20, 7/22, 7/26*
U.S. Cl. 105—282 P **6 Claims**



1. A hopper outlet comprising:

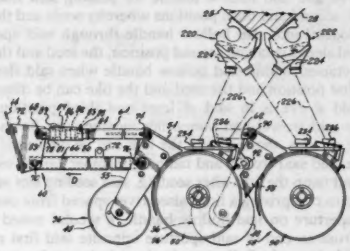
inner and outer outlet end walls joining opposite ends of transversely spaced outlet side walls; at least one fixed rack located adjacent said outer outlet end wall and extending longitudinally away from the outlet; at least one door bearing attached to a generally horizontally movable outlet gate movable below said outer outlet end wall to open position; ramp means including an inclined cam surface located below said inner outlet end wall which support said gate in closed position; a transversely extending pinion shaft movable generally in a horizontal plane between open and closed positions of said gate and including at least one pinion which rides upon said rack during movement of said gate, said pinion shaft extending through a door bearing slot in said door bearing; said door bearing slot being elongated vertically to allow vertical movement of the door bearing relative to the pinion shaft as the gate is ramped in its movement between closed and open positions, downwardly into open position and upwardly into closed position.

4,214,537

GRAIN DRILL FURROW OPENING ASSEMBLY

Alfred J. Bailey, Berkswell, and Ronald S. Sargent, Kenilworth, both of England, assignors to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed Mar. 16, 1978, Ser. No. 887,389
Claims priority, application United Kingdom, Mar. 29, 1977, 13058/77; Oct. 21, 1977, 43851/77
Int. Cl.[2] A01C *5/06*
U.S. Cl. 111—85 **2 Claims**



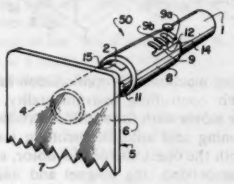
1. A grain drill including a frame, a drawbar mounted on the frame and extending forwardly therefrom, a hopper mounted on the frame, a plurality of furrow opening assemblies mounted on the frame, each furrow opening assembly including a coulter body structure, an upper link pivotally attached to the frame at one end and to the coulter body structure at the other end for pivotal movement about axies that are generally transverse to the direction of forward movement of the grain drill, a lower link substantially the same length as the upper link pivotally attached at one end to the frame below the upper link and at the other end to the coulter body structure, a first soil-engaging assembly including a slit opening disk attached to the coulter body structure, a second soil-engaging assembly including two slit-widening disks attached to the coulter body assembly for engaging the soil to the rear of the first soil-engaging assembly and adjustment means for adjusting the length of at least one of the links to adjust the soil penetration depth of the first soil-engaging assembly relative to the second soil-engaging assembly, and load means attached to the frame and to each furrow opening assembly for applying a downward force on each furrow opening assembly.

4,214,538

THREE WAY GARDEN TOOL

Barry S. Druskin, 397 Wildrose Ave., Bergenfield, N.J. 07621; Robert A. Stumpp, 59 Old Chimney Rd., Upper Saddle River, N.J. 07458, and Nora M. Muccio, 130 Grand Ave., Palisades Park, N.J. 07650

Filed Jun. 21, 1978, Ser. No. 917,558
Int. Cl.[2] A01C *5/02*
U.S. Cl. 111—95 **5 Claims**



1. A hand held garden tool for excavating, seeding and tamping an area comprising, a hollow handle having an aperture therein, a substantially flat trowel and tamping member

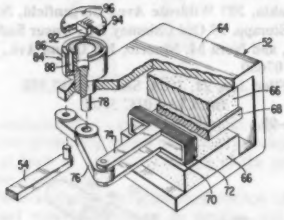
having a plurality of digging teeth connected to and closing one end of said hollow handle, said hollow handle being closed at its end opposite from said trowel and tamping member and defining a seeding space, a sleeve slidable over said hollow handle adjacent said aperture positionable in a first position for closing said aperture and said seed space, a second position spaced from said aperature for opening said aperture and at least one third position intermediate said first and second positions and partially covering said aperture for defining a seeding slot, and seeding slot adjustment means connected between said sleeve and said hollow handle for placing said sleeve in said first, second and third positions whereby seeds and the like can be loaded into said hollow handle through said aperture when said sleeve is in said second position, the seed and the like can be retained within said hollow handle when said sleeve is in said first position and the seed and the like can be dispensed when said sleeve is in said at least one third position, and whereby said trowel and tampering member can be used to excavate an area, the seed and the like can be dispensed onto said area, and said trowel and tamping member can be used to flatten and tamp the area after seeding, said seeding slot adjustment means comprising a first raised rivet spaced from one end of said aperture on said hollow handle, a second raised rivet spaced from an end of said aperture opposite said first raised rivet, said sleeve including an L shaped slot at its one end adjacent said first raised rivet engageable with said first raised rivet for placing said sleeve into said first position, said sleeve further including an elongated slot on its side opposite from said L shaped slot engageable with said second raised rivet for placing said sleeve into its second position, said sleeve being positionable into said at least one third position by abutting the end of said sleeve adjacent said elongated slot against said second raised rivet, said elongated slot extending substantially parallel to the major axis of said sleeve and includes a plurality of finger shaped slot portions disposed along the major axis of said sleeve and extending circumferentially thereof, said second raised rivet being selectively engageable into one of said finger shaped slot portions for determining the size of said seeding slot and positioning said sleeve into additional third positions.

4,214,539

POSITION SENSING DEVICE FOR ELECTRONIC SEWING MACHINE

John A. Herr, Garwood, and Wolfgang Jaffe, Roselle Park, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Sep. 21, 1978, Ser. No. 944,539
Int. Cl.[2] D05B *3/02*
U.S. Cl. 112—158 E **8 Claims**



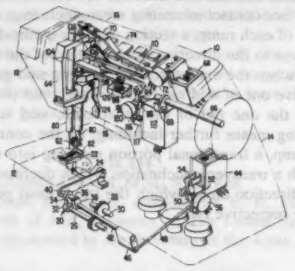
1. In a sewing machine, the combination including a linear motor, a stitch controlling instrumentality, linkage means connecting the motor with the stitch controlling instrumentality for positioning said stitch controlling instrumentality in accordance with the operation of the motor, a position sensor including an associated ring magnet and linear output Hall effect sensor one of which is fixed in the machine and the other of which is connected to the linkage means for angular displacement about the axis of the ring, the Hall effect sensor being suspended within the ring magnet to produce an output voltage which is proportional to said angular displacement and therefor to displacement of the stitch controlling instrumentality by the motor acting through the linkage means.

4,214,540

VARIABLE PRESSER BAR PRESSURE CONTROL ARRANGEMENT

Albert N. Cook, Madison, N.J., assignor to The Singer Company, Stamford, Conn.

Filed May 30, 1979, Ser. No. 43,779
Int. Cl.[2] D05B *29/00*
U.S. Cl. 112—235 **13 Claims**



1. In a sewing machine comprising a body, a feed mechanism for incrementally advancing a work piece to produce a series of stitches, and a presser bar with a presser foot attached thereto for urging said work piece into engagement with said feed mechanism, variable presser bar pressure control means comprising:

a rigid lever, said presser bar operatively engaging said lever at a first point on said lever;

means for applying a predetermined force to a second point on said lever spaced from said first point;

a shiftable fulcrum for said lever; and

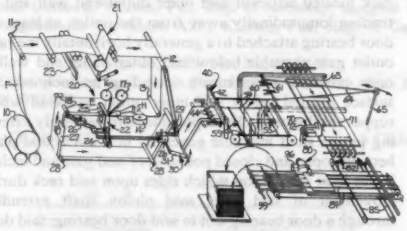
means for shifting said fulcrum along said lever to vary the mechanical advantage of said lever to control the pressure applied to said presser bar.

4,214,541

METHOD FOR MANUFACTURING PILLOWCASES

George E. Zeigler, Jr.; Charles B. Sumpter, Jr., and Carl A. Wortham, all of Eden, N.C., assignors to Fieldcrest Mills, Inc., Eden, N.C.

Filed Dec. 29, 1977, Ser. No. 865,731
Int. Cl.[2] D05B *1/00, 97/00*
U.S. Cl. 112—262.3 **12 Claims**



1. A method of continuously manufacturing pillowcases having an attached hem along the mouth of the pillowcase, said method comprising

advancing along a predetermined path from a supply source

an indeterminate length relatively narrow width fabric web for forming a hem while longitudinally folding the web about the midpoint of its width so that the longitudinal edge portions thereof are positioned in opposing relation to one another, and while simultaneously

advancing from another supply source an indeterminate length relatively wider fabric web for forming the body portion of a pillowcase and positioning one longitudinal edge thereof between the opposing longitudinal edge portions of the folded hem-forming web, and while

directing the thus associated hem-forming and body-forming webs through a sewing station and sewing the opposing edge portions of the folded hem-forming web to the portion of the body-forming web positioned therebetween to thereby form an attached hem along one longitudinal edge of the body-forming web, while also

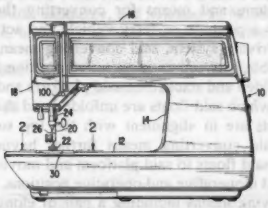
directing the hemmed body-forming web from the sewing station to a cutting station and cutting the web into individual pieces of predetermined length, while

successively folding the cut pieces along a transversely extending fold line located medially of the cut edges to position the cut edges of each successive piece in opposing relation to one another and with the hemmed longitudinal edges in substantial alignment with one another, and while successively advancing the folded pieces to a side seaming station and sewing along the cut edges thereof to form a seam therealong, directing the successive pieces from the side seaming station to an end station, and advancing the pieces successively through the end seaming station and sewing along the edge located opposite the hem to form a seam therealong and thereby closing the end of the piece to complete the pillowcase.

4,214,542
LOW BOBBIN THREAD DETECTION SYSTEM INCLUDING PHOTODETECTOR HOLDER SHIELDED WITH PLASTIC LENS

Charles R. Odermann, Montville, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jun. 4, 1979, Ser. No. 45,539
Int. Cl.² B65H *63/02*
U.S. Cl. 112—278 **9 Claims**



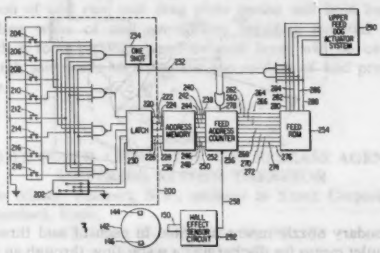
1. In a low bobbin thread detection system for a sewing machine including a light source, a photodetector to receive light from said source when bobbin thread is about to be depleted, and a warning device operable by the photodetector, the combination comprising a holder in which the photodetector is situated and which has an aperture therein to permit light from the light source to pass to the photodetector, and a plastic collar on the holder extending over the aperture and shaped opposite the aperture as a lens to focus light from the light source on the photodetector.

9. The method of forming a lens over the light admitting aperture of the photodetector holder of a low bobbin detector system for a sewing machine comprising the steps of forming a planar surface on the holder to include the aperture, forming a collar from plastic tubing of uniform cross-section, and stretching said collar around a portion of the holder including the planar surface to form a plano-convex lens opposite the aperture.

4,214,543
ELECTRONICALLY CONTROLLED TOP FEED ARRANGEMENT FOR A SEWING MACHINE

Stephen A. Garron, Elizabeth; Robert Sedlatschek, Bridgewater, and John J. Sudano, Paterson, all of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Jul. 5, 1979, Ser. No. 55,136
Int. Cl.² D05B *27/04*
U.S. Cl. 112—320 **3 Claims**



1. An electronically controlled top feed arrangement for a sewing machine comprising:

memory means for storing feed data, said feed data including for each stitch a first data portion for a feed stroke and a second data portion for a return stroke;

an upper feed dog adapted to alternately apply and relieve pressure upon a work fabric, the application of pressure occurring when the sewing machine needle is out of said work fabric;

a presser foot adapted to alternately apply and relieve pressure upon said work fabric, the relief of pressure occurring when said upper feed dog is applying pressure to said work fabric;

timing means for supplying a first timing signal during the period when the sewing machine needle is out of said work fabric and a second timing signal during the period when the sewing machine needle is penetrating said work fabric;

means operative during formation of a stitch for extracting from said memory means said feed data for said stitch;

an actuator coupled to reciprocate said upper feed dog along a feed line in response to control signals applied thereto; and

control means responsive to said first timing signal for utilizing said extracted first data portion to provide a control signal for said actuator so as to move said upper feed dog for said feed stroke, and responsive to said second timing signal for utilizing said extracted second data portion to provide a control signal for said actuator so as to move said upper feed dog for said return stroke.

4,214,544
BOAT THRUSTER

Stanley A. Dashew, Santa Monica, and Charles D. Sutton, Woodland Hills, both of Calif., assignors to Omnithruster Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 664,871, Mar. 8, 1976, Pat. No. 4,056,073, which is a continuation-in-part of Ser. No. 491,797, Jul. 25, 1974, abandoned. This application Oct. 31, 1977, Ser. No. 847,222
The portion of the term of this patent subsequent to Nov. 1, 1994, has been disclaimed.
Int. Cl.² B63H *25/46*
U.S. Cl. 114—151 **10 Claims**

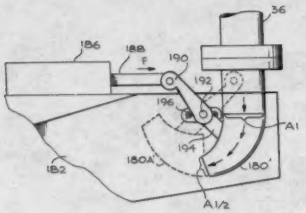
9. In combination with a boat having a hull with bow and stern portions, the improvement comprising:

pump means mounted in said hull for pumping water; and

thruster means having a common passage coupled to said pump means, for receiving the water pumped thereby,

said common passage connecting to two thruster outlet means opening to the sea at either side of the hull for discharging water into the sea thereat;

primary nozzle means mounted in each of said thruster outlet means for discharging a water flow through an exit area A sidewardly substantially perpendicular to the longitudinal axis of said hull;



secondary nozzle means mounted in each of said thruster outlet means for discharging a water flow through an exit area equal to approximately one-half A in a direction having a component parallel to said longitudinal axis; and

valve means for selectively directing the flow from said pump means to discharge the flow to the sea through said primary nozzle means or through said secondary nozzle means.

4,214,545

ANCHOR STOWING ARRANGEMENT

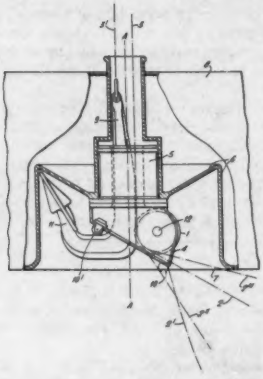
Ivar Krogstad, Arendal; Harry S. Sandøy, Kolbjornsvik, and Thor O. Haavie, Oslo, all of Norway, assignors to A/S Pusnes Mekaniske Verksted, Arendal, Norway

Filed Jun. 5, 1978, Ser. No. 912,867

Claims priority, application Norway, Jun. 6, 1977, 771972; Apr. 19, 1978, 781379

Int. Cl.² B63B *21/24*

U.S. Cl. 114—294 **5 Claims**



1. An arrangement for stowing an anchor having a shank and flukes in a vessel, of the type employing a recess in the bottom of the vessel into which the anchor may be pulled by an anchor winch on the vessel, comprising:

a fairlead arranged in said recess for receiving the anchor line and anchor shank;

said fairlead comprising a roller fairlead having at least one sheave for bending of the anchor line, a bracket for supporting said at least one sheave, said bracket being pivotable about a pivot axis approximately coinciding with the direction of pull on the anchor line by the anchor winch, said pivot axis generally coinciding with the axis of said recess;

the lower part of said bracket being provided with guide edges extending entirely around said pivot axis except for an area corresponding to the width of said at least one sheave, said guide edges extending from the lower point thereof upward to said area,

said fairlead having transverse and lengthwise dimensions sized to receive the anchor shank and to permit the anchor shank to be drawn upwardly into the fairlead until the anchor flukes engage said guide edges,

said guide edges cooperating with the anchor flukes upon further upward movement of the anchor to cause relative rotation between the anchor shank and the bracket for orienting the anchor in the recess in said vessel.

4,214,546

CONVERTIBLE AMPHIBIOUS VEHICLE

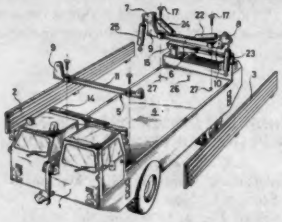
Friedrich Jochum, Kaiserslautern, and Heinz Glaser, Pflaumheim, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft, Grevenbroich, Fed. Rep. of Germany

Filed Feb. 21, 1978, Ser. No. 879,870

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1977, 2709948

Int. Cl.² B60F *3/00*

U.S. Cl. 114—270 **6 Claims**



1. An amphibious vehicle comprising a platform; a hydraulic driving system; and means for converting the amphibious vehicle into a pontoon or ferry vehicle and actuated by said hydraulic driving system, said converting means having two floats movable between an inoperative position in which said floats are folded and stacked on said platform and an operative position in which said floats are unfolded and the top surfaces of said floats are in alignment with the top surface of said platform, said converting means further having means for connecting said floats to said platform and moving the former between said inoperative and operative positions, said connecting and moving means including a pair of elongated support members arranged to extend transversely to the longitudinal axis of the vehicle, triangular guiding members each hinged at one apex thereof to an assigned end of the support members for rotation in a plane perpendicular to said support member, and four pairs of hydraulic cylinders hinged respectively between end surfaces of said floats, the free apexes of said triangular guiding members and a center point of said support members to provide articulated links expandable and retractable for unfolding and folding said floats, respectively, said elongated support members being detachably connectable to said platform so as to readily move between a first position in which said support members are unfastened and together with said guiding members and said hydraulic cylinders removed from said platform so that the vehicle serves as an amphibious vehicle, and a second position in which said support members are fastened to said platform and together with said guiding members and hydraulic cylinders are held on the latter to fold and unfold said floats so that the vehicle serves as a pontoon or ferry vehicle.

4,214,547

RIDER PROPELLED BOAT

Philip R. Hetland, 915 River Dr., Moorhead, Minn. 56560

Filed Jul. 31, 1978, Ser. No. 929,351
Int. Cl.[2] B63H *1/30, 5/00*
U.S. Cl. 440—13 5 Claims

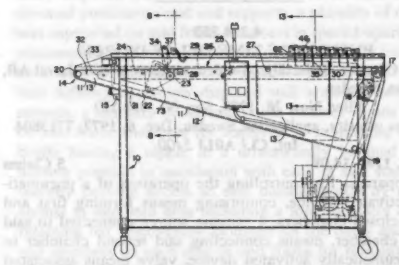
1. A pleasure craft for an operator comprising a bouyant hull having an upper surface and bottom surface portions which taper from a center keel portion upwardly toward the outer edges adjacent the rear of said hull, a framework supported on said hull and including a single strap fixed to the center keel and extending laterally with respect to the hull and having upwardly extending portions adjacent and fastened to the outer edges of the hull to form generally laterally extending portions under each of the bottom surface portions of the hull and spaced therefrom, a pair of planar flexible fin members nonrotatably attached to each of said laterally extending portions, said fin members having a forward edge supported along said laterally extending portions substantially the entire length thereof from the outer edges of the framework to the center of the hull, said fin members extending rearwardly from said laterally extending portions, said fin members being of substantially homogeneous plastic material throughout and of sufficient flexibility to bend along a hinge axis where they join the respective laterally extending portions when the hull is rocked about its longitudinal axis while in the water and to store energy to aid in the propulsion of the hull as the fins tend to return to their normal position.

4,214,548

APPARATUS FOR PRE-DUSTING FOOD PRODUCTS

Raymond E. Booth, Sandusky, and Michael E. Miller, Bellevue, both of Ohio, assignors to Sam Stein Associates, Inc., Sandusky, Ohio

Filed Aug. 25, 1978, Ser. No. 936,705
Int. Cl.[2] B05C *3/00*
U.S. Cl. 118—18 11 Claims



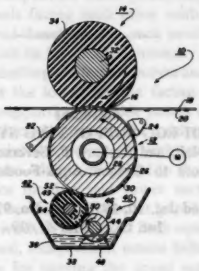
1. Apparatus for providing a very light pre-dusting coating on a food piece intended for batter-coating, comprising a frame having parallel longitudinally extending side frame members, a movable wire mesh conveyor belt on said frame having a generally horizontal coating run across said frame, means for driving said conveyor belt, a flat slider plate on said frame beneath a first product-piece-receiving portion of said run, means for depositing a layer of pre-dusting breading material on said belt above said slider plate, drag plate means pivotally mounted on said frame above said first portion of said run and near the downstream end of said slider plate, the length of said drag plate means from its pivotal axis to its free swinging lower end being less than the distance from said drag plate means pivotal axis to said conveyor belt, and the width of one plate of said drag plate means transverse to the belt being preferably less than said length, whereby with a layer of predetermined thickness of said pre-dusting breading material on said first portion of said run, said drag plate means will hold back a standing wave of said pre-dusting breading material after which a food product piece on said layer will be carried through said wave to cover the top surface of said product piece.

4,214,549

ROLL FUSER APPARATUS AND RELEASE AGENT METERING SYSTEM THEREFOR

Rabin Moser, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 28, 1978, Ser. No. 920,110
Int. Cl.[3] G03C *13/20*
U.S. Cl. 118—60 4 Claims



1. In a contact fuser apparatus having a heated roll structure cooperating with a backup roll structure to form a nip through which copy substrates carrying toner images pass with said toner images contacting the heated fuser roll, wherein a release agent contained in a sump is applied to the surface of the heated roll structure to minimize offset of toner thereto and facilitate separation of the substrate from the heated fuser roll, the improvement comprising a rotatably supported donor roll contacting said heated roll structure and a smooth metal-surfaced rotatably supported metering roll supported for contact with said donor roll and said release agent in said sump, and a metering blade contacting said metering roll for metering said release agent to a predetermined thickness thereon, said donor roll comprising a deformable surface capable of having a pair of nips formed therein through pressure contact with said heated roll structure and said metering roll, and further comprising means coupled to said heated roll structure for effecting rotation of said structure and, in turn, rotation of said rolls by said heated roll structure.

4,214,550

APPARATUS FOR THE DEPOSITION OF A MATERIAL FROM A LIQUID PHASE

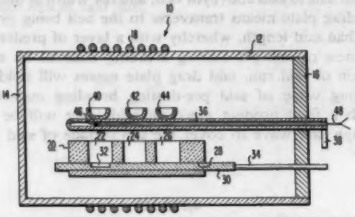
Frank Z. Hawrylo, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 21, 1979, Ser. No. 41,087
Int. Cl.[2] H01L *21/208;* B05C *3/18*
U.S. Cl. 118—712 6 Claims

1. In an apparatus for epitaxially depositing at least one layer of a material on a substrate from a liquid phase which includes a furnace boat having at least one well for containing a deposition solution, the improvement comprising:

a container for containing an additive for the deposition solution,

support means supporting said container over the well of the furnace boat and adapted to move said container to a



position whereby the additive can enter the well in the furnace boat, and

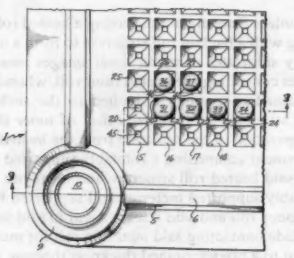
means in said support means for measuring the temperature of the additive in the container and the deposition solution in the adjacent well.

4,214,551

FISH EGG SUPPORTING SYSTEM

William J. McNeil, and Richard F. Severson, both of Eugene, Oreg., assignors to Oregon Aqua-Foods, Inc., Springfield, Oreg.

Filed Jul. 10, 1978, Ser. No. 922,884
Int. Cl.[2] A01K *61/00*
U.S. Cl. 119—3 **4 Claims**



1. A system for supporting fish eggs comprising:

a supporting member having upper and lower surfaces;

said upper surfaces formed with perforations to define a waffle pattern of egg supporting apertures;

said apertures including egg contacting means for discontinuously engaging a portion of an egg's surface and permitting the flow of gases and fluids within said aperture and around said egg through the passageways between said discontinuous engagement of said egg by said contacting means;

each of said apertures being sized to retain only one egg;

said apertures being spaced a distance from one another to maintain a gap between eggs supported in adjacent apertures; and

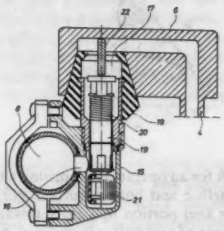
said apertures each define an opening from said upper surface to said lower surface of a size large enough to permit the flow of gases and fluid but small enough to prevent the passage of alevin through said opening.

4,214,552

VALVE COUPLING FOR VACUUM LINE

Karl E. Olander, Sodertalje, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Sep. 20, 1978, Ser. No. 944,128
Claims priority, application Sweden, Oct. 14, 1977, 7711584
Int. Cl.[2] A01J *7/00*; F16L *37/28*
U.S. Cl. 119—14.01 **3 Claims**



1. In combination with an external object and a vacuum line, a coupling device comprising a first connection means with which said external object is provided, and a valve including a housing having an outlet adapted to communicate with said vacuum line and also having an inlet, a second connection means forming said inlet and which is adapted to be coupled with said first connection means, said housing forming a passage from said inlet to said outlet, the valve also including a valve body in said housing and a spring urging the valve body to a first position for closing said passage, said first connection means having a member operable to move the valve body to a second position for opening said passage when the two connection means are coupled together, one of said connection means having a contact surface in the form of a truncated cone engageable with a complementary surface of the other connection means, at least one of the connection means being made of an elastic material, the two connection means being releasably held together, with their respective said surfaces engaging each other, by the pressure difference between the vacuum in the valve housing and the ambient atmosphere when the two connection means are coupled together, said second connection means being made of a rubber material in the form of a pierced truncated cone which tapes in a direction away from the valve housing, said truncated cone having a substantially vertical axis of symmetry and at its upper portion forming said inlet.

4,214,553

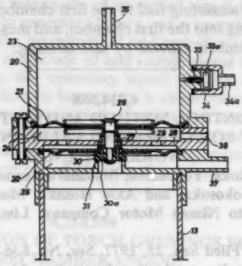
PNEUMATIC TIME DELAY DEVICE

Karl E. Olander, Södertälje, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Nov. 28, 1978, Ser. No. 964,182
Claims priority, application Sweden, Dec. 6, 1977, 7713804
Int. Cl.[2] A01J *5/00*
U.S. Cl. 119—14.08 **5 Claims**

1. Apparatus for controlling the operation of a pneumatically activated device, comprising means forming first and second closed chambers, a vacuum source connected to said second chamber, means connecting said second chamber to said pneumatically activated device, valve means associated with said second chamber and having a first position for preventing access of the pneumatically actuated device to said vacuum source while connecting said device to atmosphere, said valve means having a second position for permitting access of the pneumatically actuated device to said vacuum source while disconnecting said device from atmosphere, an adjustable throttling valve, and a control unit connected to said first chamber and operable to draw air therefrom through said throttling valve to reduce the pressure in the first cham-

ber, after a time delay, sufficiently to move said valve means from its first position to its second position, the extent of said



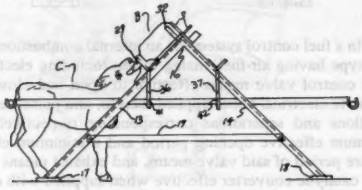
time delay being adjustable by adjustment of said throttling valve.

4,214,554

FEEDING APPARATUS FOR NURSING ANIMALS

James L. Smith, Jr., 5742 Wilkins Ave., Oakdale, Calif. 95361

Filed Sep. 6, 1978, Ser. No. 940,022
Int. Cl.[2] A01K *9/00*
U.S. Cl. 119—71 6 Claims



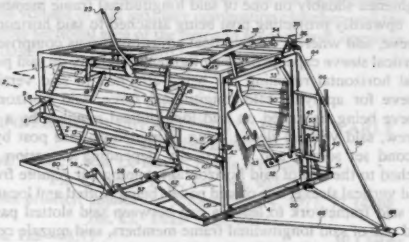
1. A feeding apparatus for nursing animals such as calves or the like comprising, in combination, a frame including a pair of end supports and a plurality of longitudinally extending, centrally disposed frame members supported at each end in an elevated position on said end supports, a plurality of rod members supported on said frame members in spaced-apart, parallel relationship, said rod members extending laterally outward on both sides of said frame, each adjacent pair of said rod members defining oppositely disposed stall areas for said nursing animals, a plurality of nursing bottle retainer means mounted on said frame members for removeably supporting a nursing bottle having a nipple in a downwardly inclined inverted nursing position in association with each of said stall areas to thereby provide access to said nursing bottle by a nursing animal in said stall area including a longitudinally extending retaining bar removeably mounted on the outer ends of said rod members on each side of said frame for preventing backward movement of said nursing animals from said stall areas wherein said plurality of nursing bottle retaining means are arranged on said frame members in longitudinally spaced pairs with the retaining means in each of said pairs in oppositely disposed relationship and wherein said end supports are A-shaped in configuration having an apex and including a pair of angularly disposed end frame members interconnected at said apex and a bracing member connected at each end to one of said end frame members.

4,214,555

CATTLE VISE

Ken Sawby, P.O. Box 520, Maple Creek, Saskatchewan, Canada

Filed Apr. 14, 1978, Ser. No. 896,284
Claims priority, application Canada, Feb. 1, 1978, 614867
Int. Cl.[2] A61D *3/00*
U.S. Cl. 119—103 11 Claims



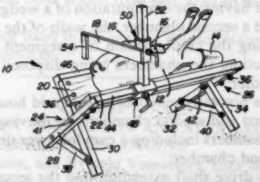
1. A cattle vise comprising a frame having width at least sufficient to accommodate an animal, having an open bottom, and a lower edge adapted for stable positioning on the ground, a pair of side panels facing each other within the frame for clamping the animal therebetween, each panel having a lower section inclined with its lower edge inwardly of the frame and an upper section abutting the lower section and forming a wide obtuse angle with the lower section facing inwardly of the frame, means for supporting said side panels in the frame, said supporting means including means for guiding one of the panels for relative horizontal movement with respect to the other of the panels, means behind and linked to the lower section of said one panel for moving said lower section horizontally toward the lower section of the other panel with said animal disposed therebetween so as to exert both squeezing and lifting force to said animal, independent means behind and linked to the upper section for moving the upper section of said one panel toward the upper section of the other panel to complete the clamping of said animal, and means for supporting said moving means relative to the frame.

4,214,556

DEVICE FOR IMMOBILIZING ANIMALS

Harry D. Knox, R.R. #1, Barfield Rd., Murfreesboro, Tenn. 37130, and James P. Summar, R.R. #2, Box 385, Readyville, Tenn. 37149

Filed Jul. 3, 1978, Ser. No. 922,169
Int. Cl.[2] A61D *3/00*
U.S. Cl. 119—103 3 Claims



1. A device for immobilizing an animal comprising a supporting framework, panels attached to said framework, an adjustable muzzle cone for securing the head of said animal, and attached to one of said panels and retaining means fastened by adjustable means to said framework, said retaining means being movable on said framework in the longitudinal direction of said animal to apply longitudinal force on the animal toward said muzzle cone, wherein said animal rests in a supine position on said panels and said adjustable means comprises a horizontal

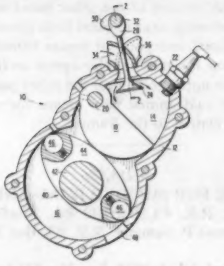
retaining bar, a horizontal adjusting means, and a vertical adjusting means, wherein said framework comprises two parallel pairs of upright crossed legs connected together to each other at the crossing, the pairs being connected by longitudinal frame members attached to the corresponding upper end of each leg, a pair of said panels being attached to said crossed legs in a V-shaped configuration, wherein said horizontal adjusting means comprises a horizontal sleeve capable of being tightened slidably on one of said longitudinal frame members, an upwardly projecting post being attached to said horizontal sleeve, and wherein said vertical adjusting means comprises a vertical sleeve capable of being tightened slidably on said post, said horizontal retaining bar being attached to said vertical sleeve for applying said longitudinal force, said horizontal sleeve being tightened on said longitudinal member by a set screw, said vertical sleeve being tightened on said post by a second set screw, and a vertically depending extension attached to the end of said horizontal retaining bar remote from said vertical sleeve, one of said panels being slotted and located on said framework to leave a gap between said slotted panel and one of said longitudinal frame members, said muzzle cone comprising flexible belting attached by attaching means at one end to said slotted panel and passing beneath said slotted panel and through the slot of said slotted panel, thence through said gap.

4,214,557

PIVOTING WALL TYPE, FOUR STROKE, INTERNAL COMBUSTION, ROTARY ENGINE

Corbett D. Beach, Jr., Rte. 1, Box 218, Mannington, W. Va. 26582

Filed Aug. 15, 1978, Ser. No. 933,840
Int. Cl.[2] F02B *53/00*
U.S. Cl. 123—18 R **4 Claims**



1. A four cycle rotary engine providing intake, compression, power, and exhaust phases of operation comprising:

a housing defining a first chamber, the walls of the first chamber having the configuration of a wedge in cross-section, and a second chamber, the walls of the second chamber having the configuration of a segment of a circle in cross-section, the chambers being disposed adjacent one to the other;

wall means pivotally mounted within said housing common to the first and second chambers for moving into and out of the chambers including a cam follower disposed within the second chamber;

a rotatable drive shaft extending into the second chamber;

an elongated rotor having a pair of opposed peripheral extensions mounted on said drive shaft within the second chamber;

seal means mounted on the periphery of each of the extensions of said rotor for engaging adjacent wall portions of the second chamber;

cam means defined by the external surface of said rotor for engaging the follower on said wall means for pivoting said wall means into and out of the first and second chambers as said drive shaft rotates said cam means permitting said wall means to open into the second chamber and place said first and second chambers in communication only during the exhaust phase of operation;

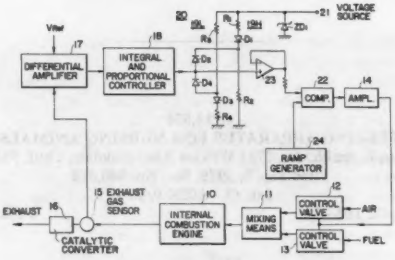
means for admitting fuel to the first chamber, ignition means extending into the first chamber, and means for exhausting said chambers carried by said housing.

4,214,558

FUEL CONTROL METHOD AND SYSTEM WITH A CIRCUIT FOR OPERATING VALVE IN EFFECTIVE WORKING RANGE

Tetsuji Nishioka, Yokohama; Masaharu Asano; Makoto Anzai, both of Yokosuka, and Akio Hosaka, Mori, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 23, 1977, Ser. No. 836,014
Claims priority, application Japan, Sep. 24, 1976, 51-113613
Int. Cl.[2] F02B *3/00*
U.S. Cl. 123—489 **7 Claims**



1. In a fuel control system for an internal combustion engine of a type having air-fuel mixing means including electromagnetic control valve means effective to open and close in response to electrical pulses applied thereto, said pulses requiring durations and separations corresponding respectively to a minimum effective opening period and a minimum effective closure period of said valve means, and exhaust means including a catalytic converter effective when supplied with exhaust gases containing air and fuel in a certain ratio to accelerate simultaneously the oxidation of unburned fuel and the reduction of nitrogen oxides, comprising:

means for generating a first signal indicative of the concentration of a predetermined constituent of the gases in said exhaust means;

means for generating a second signal representative of the deviation of said first signal from a predetermined value representing a desired air-fuel ratio; and

means responsive to said second signal for generating control pulses for operating said air-fuel mixing control valve means;

wherein there is a tendency for hesitation and resultant time lag in control valve operation to occur caused by application thereto of control pulses having variable durations and separations that extend below said minimum required periods of said required pulses,

a system for reducing the hesitation and time lag, comprising:

means for generating periodically occurring electrical waveforms with a magnitude varying as a function of time between first and second constant levels;

means for limiting the magnitude of said second signal to a first value lower than said first constant level of said periodic waveforms corresponding to one of said minimum open and closure periods of said valve means and for limiting the magnitude of said second signal to a second value higher than said second constant level of said periodic waveforms corresponding to the other one of said

minimum open and closure periods of said valve means; and

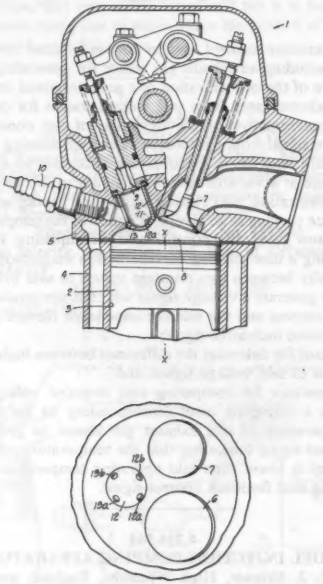
means for comparing the magnitude of said periodic waveforms with the magnitude of an output signal from said limiting means to generate a binary, valve operating signal depending on the magnitude of said periodic waveforms relative to the magnitude of said output signal from said limiting means, the operating signal thereby having a minimum duration no larger than a value corresponding to the minimum open period of said valve means and a minimum interval between successive ones of said operating signal no larger than a value corresponding to said minimum closure period of said valve means.

4,214,559

ORIENTATION OF TORCH OPENINGS FOR PRECHAMBER ENGINE

Toru Hatanaka, Urawa, and Yoshitoku Iizuka, Toda, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 780,318, Mar. 23, 1977, Pat. No. 4,144,848. This application Jan. 22, 1979, Ser. No. 5,314
Claims priority, application Japan, Apr. 1, 1976, 51-35182
Int. Cl.[2] F02B *23/06*
U.S. Cl. 123—293 **3 Claims**



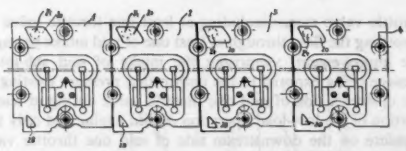
1. In an internal combustion engine, the combination of walls including a movable piston forming a main combustion chamber, said main combustion chamber having a wedge shaped apex near the extended axis of said piston, an intake valve and an exhaust valve each having a head portion projecting into said main combustion chamber, walls forming an auxiliary combustion chamber, said auxiliary combustion chamber being positioned within said engine adjacent said main combustion chamber apex and the bottom wall of said auxiliary combustion chamber projecting into said main combustion chamber, at least three torch openings in said bottom wall establishing communication between said chambers, means for igniting a mixture in said auxiliary combustion chamber to cause flames to project through said torch openings to ignite a mixture in said main combustion chamber, the first of said torch openings being positioned to direct a flame near said intake valve, the second of said torch openings being positioned to direct a flame near said exhaust valve, the third of said torch openings being positioned opposite said first and second torch openings to direct a flame toward a region of said main combustion chamber remote from said valves, all of said torch openings being provided in the bottom wall of said auxiliary combustion chamber, the total cross sectional areas of said torch openings being from 0.04–0.20 square centimeters for each cubic centimeter of volume of said auxiliary combustion chamber, and the total cross sectional area of the first and second torch openings being larger than that of third torch opening.

4,214,560

CYLINDER HEAD IMPROVEMENT, PARTICULARLY FOR A DIESEL ENGINE

Jean M. Nikly, 2 Rue Le Royer, Lyons, France (7)

Filed May 4, 1978, Ser. No. 902,717
Claims priority, application France, May 4, 1977, 77 14305
Int. Cl.[2] F01P *3/14, 3/16*
U.S. Cl. 123—41.77 **10 Claims**



1. a cylinder head for a diesel engine, comprising:
an inlet manifold and an exhaust manifold;
rocker arms;
an injector;
said inlet manifold and said exhaust manifold being disposed on the same side of said cylinder head, opposite to said rocker arms and said injector;
said cylinder head being affixed to an engine block by an arrangement of six bolts;
each of said six bolts defining, when viewed from above, one of the points of a regular hexagon, two sides of said hexagon being perpendicular to the central longitudinal plane of the engine;
said inlet manifold opening onto the upper face of said cylinder head;
said exhaust manifold opening onto a lateral face of said cylinder head;
said injector being fixed directly into a seating in said cylinder head in an inclined position relative to the central longitudinal plane of the engine and parallel to the axis of a cylinder of the engine, so as to extend above a relatively short one of said bolts which fixes said head to the engine block; and
said injector being fixed in the seating thereof between two rocker arm push-rods.

4,214,561

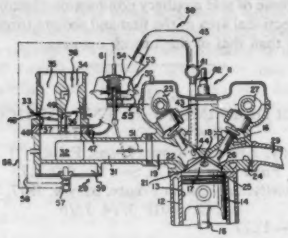
INDUCTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Hiromitsu Matsumoto, and Ryuichi Yamashita, both of Hamamatsu, Japan, assignors to Yamaha Hatsukoki Kabushiki Kaisha, Shizuoka, Japan

Filed Jun. 1, 1978, Ser. No. 911,402
Claims priority, application Japan, Sep. 9, 1977, 52-108489
Int. Cl.[2] F02D *39/02*
U.S. Cl. 123—432 **13 Claims**

1. In an internal combustion engine having a variable volume chamber in which combustion occurs, a main intake passage communicating with said chamber through a main intake port for delivering a charge thereto, a sub-intake passage communicating with said chamber through a sub-intake port, said sub-

intake passage having an effective cross-sectional area substantially less than the effective cross-sectional area of said main intake passage for causing a given mass flow charge through the said sub-intake passage to enter said chamber at a significantly greater velocity, and throttle valve means for controlling the ratio of the communication of said ports with said chamber during a given cycle of operation of said engine, said



throttle valve means including at least one throttle valve for throttling the flow through at least one of said intake passages, the improvement comprising the intake of said sub-intake passage being exposed to the unthrottled pressure existing on the upstream side of said one throttle valve during at least a portion of the low-load operation of said engine and only to a pressure on the downstream side of said one throttle valve during another portion of the operation of the engine.

4,214,562

VALVE CONTROL ARRANGEMENTS

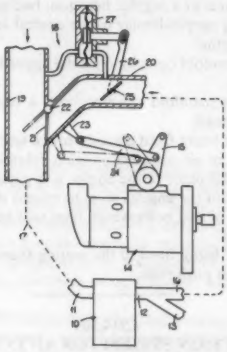
Dorian F. Mowbray, Burnham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jun. 28, 1978, Ser. No. 919,975

Claims priority, application United Kingdom, Jul. 8, 1977, 28820/77

Int. Cl.[2] F02M *25/00*

U.S. Cl. 123—568 **4 Claims**



1. An internal combustion engine provided with a system for controlling the flow of exhaust gas from an exhaust manifold to an air inlet of the internal combustion engine, said system comprising a first conduit portion forming part of the air inlet system of the engine, a second conduit portion joined to said first conduit portion, a flow control valve comprising a flap valve hinged at the upstream portion of said first conduit at its juncture with said second conduit and operable by means associated with the engine in response to the fuel requirements thereof, a butterfly valve disposed in said second conduit portion and means responsive to the pressure drop across said flap valve for adjusting the butterfly valve so that the pressure drop across the flap valve is substantially zero, said second conduit portion being connected to the exhaust manifold of the engine.

4,214,563

EXHAUST GAS TEMPERATURE DETECTION BY INJECTION OF TIME-VARYING CURRENT

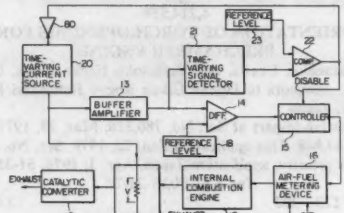
Akio Hosaka, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 19, 1978, Ser. No. 971,082

Claims priority, application Japan, Dec. 21, 1977, 52-152837

Int. Cl.[2] F02B *3/08*

U.S. Cl. 123—437 **12 Claims**



1. A mixture control system for an internal combustion engine including an exhaust gas sensor for generating a signal indicative of the concentration of a predetermined constituent of the exhaust gases from said engine, means for deriving a signal representative of the deviation of the concentration indicative signal from a reference value representing a desired air-fuel ratio, and means for supplying mixture of air and fuel to said engine at a variable ratio in response to the deviation of said concentration, said exhaust gas sensor having an internal impedance varying as an inverse function of the temperature of said exhaust gases, said control system comprising: a source of injecting a time-varying current with a magnitude varying periodically between two constant values to said exhaust gas sensor to generate a voltage signal which is the product of the injected current and the internal impedance thereof plus said concentration indicative signal;

a detector for detecting the difference between high and low levels of said voltage signal; and

a comparator for comparing said detected voltage signal with a reference level corresponding to an operating temperature of said exhaust gas sensor to generate an output signal indicating that the temperature of said gas sensor is lower than said operating temperature for disabling said feedback control signal.

4,214,564

FUEL INJECTION PUMPING APPARATUS

Robert T. J. Skinner, High Wycombe, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Dec. 20, 1977, Ser. No. 862,506

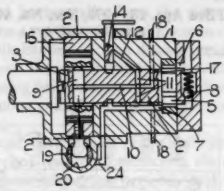
Claims priority, application United Kingdom, Dec. 17, 1976, 52939/76

Int. Cl.[2] F02D *1/16*

U.S. Cl. 123—502 **3 Claims**

1. A fuel injection pumping apparatus for supplying fuel to an internal combustion engine and of the kind comprising an injection pump operable in use, in timed relationship with an associated engine, a feed pump for supplying fuel to the injection pump, valve means for controlling the output pressure of the feed pump so that it varies in accordance with the speed at which the apparatus is driven in use, the injection pump including cam means movable to adjust the timing of delivery of fuel by the injection pump and a fluid pressure operable piston for adjusting the setting of said cam means resilient means for biasing said piston

the setting of said fluid pressure operable piston being dependent upon the outlet pressure of the feed pump, an axially movable pin engageable with said piston between a first position and a second position, said pin when in said first position maintaining said cam means in a position such that the delivery of fuel is advanced, further resilient means biasing said pin to said first position, a temperature sensitive device responsive in use, to the temperature of



the associated engine and means operatively coupling said device and said pin comprising a Bowden cable having an inner member and an outer member whereby as the engine becomes warm the pin is moved against the action of the further resilient means from the first position to the second position, said cam means when said pin is in said second position being free to move under the control of said fluid pressure operable piston.

4,214,565

FUEL INJECTION APPARATUS

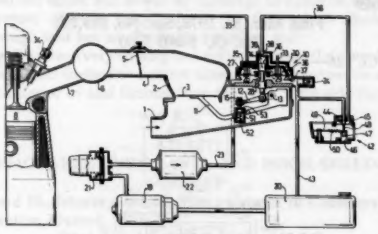
Heinrich Knapp, Leonberg; Thomas Wilfert, Markgröningen; Alfred Grässle, Ludwigsburg, and Paul Füssner, Sindelfingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 29, 1978, Ser. No. 937,882

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 2744733

Int. Cl.² F02M *39/02, 1/00*

U.S. Cl. 123—179 L **4 Claims**



1. A fuel injection apparatus for mixture-compressing, externally ignited internal combustion engines with an induction tube in which an air flow rate member and an arbitrarily actuatable throttle valve are arranged in seriatim and the air flow rate member is moved against a return force in accordance with the quantity of air flowing therethrough, thus adjusting a control slide embodied as a movable part of a metering and distribution assembly arranged in the fuel supply line in order to effect the apportionment of a quantity of fuel proportional to the air quantity, characterized in that transmission means including a compression spring are provided between said control slide and said air flow rate meter and wherein the control slide of the metering and distribution assembly opposite the air flow rate member is displaceable in accordance with temperature.

4,214,566

IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

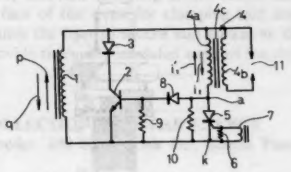
Hirotoshi Nanjo, Susono, and Katsuo Murakami, Numazu, both of Japan, assignors to Kokusan Denki Co., Ltd., Numazu, Japan

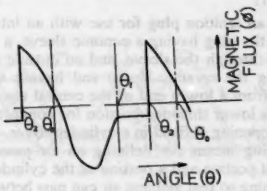
Filed Sep. 1, 1978, Ser. No. 938,887

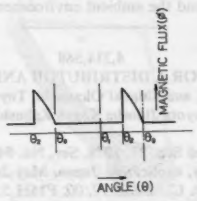
Claims priority, application Japan, Sep. 14, 1977, 52-123847[U]

Int. Cl.² F02P *1/00*

U.S. Cl. 123—594 **7 Claims**





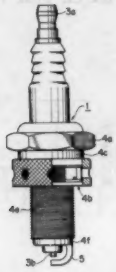


1. An ignition system for an internal combustion engine, comprising: an ignition coil having a primary winding and a secondary winding wound upon a magnetic core having magnetic retentivity, an exciter coil producing an AC voltage in synchronism with rotation of the engine and connected to said primary winding of said ignition coil to supply the AC voltage to said primary winding, a primary current control switch connected in parallel with the exciter coil and the primary winding of the ignition coil and adapted to be made conductive immediately when an output of the exciter coil changes to a given polarity to permit a current to flow therethrough and changed from conductive state to nonconductive state at the ignition angle to cause a sudden increase in the primary winding current to induce a high voltage in said secondary winding, thereby firing the ignition plug, characterized in that said ignition system further comprises resistor means for providing a path, when the exciter coil is of opposite polarity, for a current through said primary winding in a direction opposite to the current which flows through the primary winding at the ignition angle to reset the flux in the core, intermediate successive ignition angles, to a value below the abscissa on the B-H curve.

4,214,567
INTERNAL COMBUSTION ENGINES

Enami Goto, Yokohama, Japan, assignor to Kunihiko Miyaji, Tokyo, Japan

Filed Oct. 24, 1978, Ser. No. 954,201
Claims priority, application Japan, Oct. 11, 1978, 53/124798
Int. Cl.[2] F02B 75/02; F02P 1/10; F01L 13/08
U.S. Cl. 123—169 C 6 Claims

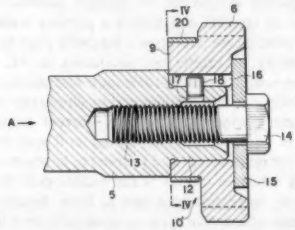


1. In an ignition plug for use with an internal combustion engine, the plug having a ceramic sleeve, a central electrode passing through the sleeve, and an outside metal casing surrounding the ceramic sleeve and having a portion thereof spaced from a lower end of the central electrode, the casing having a lower threaded portion for connecting the plug to a tapped opening defined in a cylinder cover, the improvement comprising means for defining an air passage between the threaded portion and a portion of the cylinder cover defining the opening so that ambient air can pass between the plug and cover portion, and wherein a separate ring assembly surrounds a portion of the plug, the ring assembly having passages formed therein for establishing fluid communication between the air passage and the ambient environment.

4,214,568
DRIVE UNIT FOR A DISTRIBUTOR AND A FUEL PUMP

Eiji Ito, Nagoya, and Shigeki Okaguchi, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 27, 1978, Ser. No. 946,160
Claims priority, application Japan, May 26, 1978, 53-62285
Int. Cl.[2] F02B 77/00; F16H 53/00
U.S. Cl. 123—198 R 4 Claims



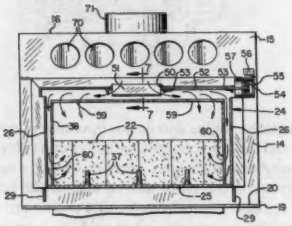
1. A drive unit for a distributor and a fuel pump of a spark ignition internal combustion engine, the unit including a drive gear integrally formed with an axially adjacent drive cam, the integral gear and cam unit being adapted to be mounted on a camshaft of the engine with the drive gear in meshing engagement with a driven gear on a distributor drive shaft and with the cam in sliding engagement with a fuel pump actuating lever, wherein the improvement comprises:

said integral drive gear and cam unit being formed of easily machineable non-heat treated material, and said unit further comprising a fully heat treated collar interference fitted onto the drive cam to provide a wear resistant surface for said cam.

4,214,569
FIREPLACE STOVE

Friedrich W. Heine, 577 Garfield, P.O. Box 10924, Eugene, Oreg. 97401

Filed Apr. 10, 1978, Ser. No. 894,554
Int. Cl.[2] F24C 1/14
U.S. Cl. 126—77 6 Claims



1. In a fireplace stove,

a body having a door opening,

a tubular door frame of metal extending at least partially around the door opening,

a door detachably secured to the door frame,

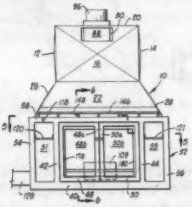
the door frame having a draft inlet opening and a draft outlet opening spaced along the door frame from the inlet opening,

and damper means for adjustably controlling flow of air through the door frame from the inlet opening to the outlet opening.

4,214,570
HEATING SYSTEM

Kenneth Hansmeyer, 1011 W. Tecumseh Rd., Norman, Okla. 73069

Filed Mar. 23, 1978, Ser. No. 889,201
Int. Cl.[2] F24B 7/00
U.S. Cl. 126—121 13 Claims



1. A fireplace heating system comprising:

a firebox having opposite side walls, a back wall extending between said side walls and an open front side spaced from and opposite said back wall;

an angulated stack connected to the firebox at the upper side thereof and extending generally upwardly from the firebox, said stack having a lower portion, a central portion projecting vertically from said lower portion, and an upper portion extending upwardly and rearwardly in the direction of the back wall of the firebox from said central portion;

housing means around the firebox and stack and defining with

the firebox and stack an air plenum chamber, said housing means including:

an upper portion surrounding, and spaced from, the upper portion of said stack and having an upper air opening at the forward, top side of said upper portion and spaced upwardly from the open front side of said firebox, said upper air opening being positioned opposite said upper portion of said stack; and

a base portion including:

a bottom wall;

side walls spaced horizontally from the side walls of the firebox to define a portion of said air plenum chamber, one of said side walls having a hot air discharge opening therethrough adjacent and above said bottom wall, said hot air discharge opening being aligned with the lowermost portion of said firebox and adapted for connection to a forced air device; and

a back wall spaced horizontally rearwardly from the back wall of the firebox and interconnecting the side walls of said base portion, said space between said base portion back wall and the back wall of the firebox forming a portion of said air plenum chamber;

said base portion having horizontally spaced lower air openings in horizontal alignment with the open front side of the firebox and on opposite sides of said firebox opening, said lower air openings each being disposed substantially closer to said hot air discharge opening than said upper air opening, and each of said lower air openings opening in the same direction as the open front side of the firebox for receiving relatively cool air from a room into which said firebox opens; and

a central portion positioned between and interconnecting said housing means upper portion and said housing means base portion, and surrounding and spaced from said lower portion of said stack, said central portion of said housing means being disposed between said upper air opening and said hot air discharge opening;

baffle means in said air plenum chamber and disposed between said upper air opening and said hot air discharge opening for directing air entering said air plenum chamber from said upper air opening in a circuitous elongated path, including a portion of said path extending in a horizontal direction around said firebox, en route to said hot air discharge opening, said baffle means, hot air discharge opening, upper and lower air openings all cooperating to proportionately mix air from the upper and lower air openings to optimize the temperature of such mixed air at the time of its discharge through said hot air discharge opening; and

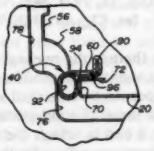
means for selectively closing to a desired degree the open front side of said firebox to control admission of combustion air to the interior of said firebox from the open front side thereof.

4,214,571

REMOVABLE OVEN PANEL AND DOOR SEALING GASKET

Richard M. Scherer, Oxford, Miss., assignor to Chambers Corporation, Oxford, Miss.

Filed Jan. 16, 1978, Ser. No. 869,765
Int. Cl.[2] F23M 7/00
U.S. Cl. 126—190 **10 Claims**



1. In an oven having an open-end liner disposed within the oven in a spaced apart relationship and including an oven door movable from an open position to a closed position adjacent the oven front face, a sealing gasket comprising:

a substantially rectangular rigid hoop having a configuration corresponding to the open end of the liner;

a substantially rectangular thermal insulating band having a configuration corresponding to the liner open end, said band being disposed adjacent to and in front of the liner open end to engage the door in a closed position to form a thermal seal between the door and the liner;

thermal insulating means for attaching said hoop to said band and for supporting and securing said band adjacent to and in front of the liner open end;

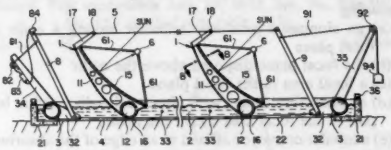
said rigid hoop and said insulating means cooperating with the front face of the oven for clamping said insulating means against the liner to secure said gasket on the liner and to provide thermally insulated support for the liner.

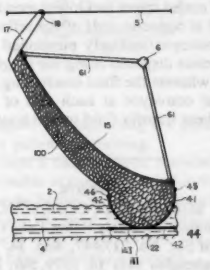
4,214,572

COLLECTION OF SOLAR ENERGY

Warren W. Gonder, 298 Space View Dr., Grants Pass, Oreg. 97526

Filed Jul. 12, 1978, Ser. No. 924,210
Int. Cl.[2] F24J 3/02; F03G 7/02
U.S. Cl. 126—425 **11 Claims**





1. Apparatus for collecting solar energy, which apparatus comprises

(a) a pool of liquid;

(b) a frame buoyantly disposed on and in contact with said pool of liquid;

(c) a plurality of horizontal elongate parallel solar collection devices for collecting solar energy, said devices being attached to said frame and each said device comprising (i) an elongate horizontal reflector body which is buoyantly disposed on and in contact with said pool of liquid and which has a reflecting surface of generally parabolic cross-section and (ii) an elongate horizontal absorption device at the focal point of said parabolic reflecting surface;

(d) azimuthal rotation means for rotating said frame to place said solar collection devices in a desired position relative to the sun; and

(e) elevational rotation means for rotating each said horizontal reflector body about its longitudinal axis to place said solar collection devices in a desired position relative to the sun wherein each said reflector body comprises a plurality

of hollow glass bodies which are connected together through randomly coalesced wall portions.

4,214,573

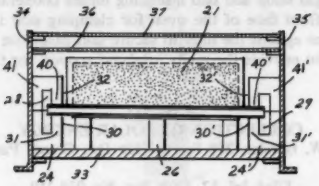
SOLAR ENERGY COLLECTOR

William P. Niedermeyer, 1024 Mt. Mary Dr., Green Bay, Wis. 54301

Continuation-in-part of Ser. No. 844,924, Oct. 25, 1977. This application Jul. 18, 1978, Ser. No. 925,778

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—438 **2 Claims**



1. Apparatus for collecting, concentrating and absorbing solar rays and transferring solar energy to a heat transfer fluid, including

(a) an elongated parabolic reflector having a nadir and a focal plane

(b) the focal plane disposed above the nadir

(c) a focal area in the focal plane

(d) an absorbing means with planar sides disposed at least in part in the focal area above the nadir,

(e) a tubular conveyor affixed to an edge of the absorber and disposed above the reflector

(f) a pair of elongated fluid conducting manifolds each formed of mated upper and lower members said manifolds positioned at opposite ends of the reflector with the ends of said conveyor sealingly positioned and supported in mated recesses disposed along the length of said manifold members, wherein the fluid conducting manifolds support the tubular conveyor at each end of the reflector and conduit a heat transfer fluid to and way from the conveyors.

4,214,574

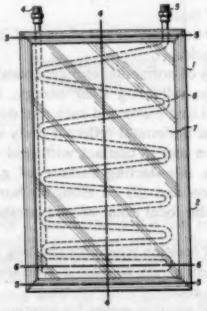
SOLAR HEAT COLLECTOR

Edward J. O'Hanlon, Assembly Point, Lake George, N.Y. 12845

Continuation of Ser. No. 717,447, Aug. 24, 1976, abandoned. This application May 14, 1979, Ser. No. 38,749

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—446 **7 Claims**



1. A solar heat collecting panel comprising a tray assembly having a bottom portion, a plurality of upstanding vertical sides and internal vertical partitions, said partitions having a length-wise slot, a corrugated transparent or translucent sheet having edges resting on resilient material mounted on said vertical sides, with said sheet and said resilient material held tightly within the boundaries of said tray, a darkened metallic solar heat absorbing surface arranged within said tray assembly, thermal insulating material extending between said tray and said darkened solar heat absorbing surface, said darkened surface having a tube fastened underneath thereon, said tube conveying a solar heat absorbing fluid, both ends of said tube protruding from one end of said tray, said tube serpentined within said tray, a first layer of heat insulative material positioned beneath said tube, a highly reflective surface extending beneath said first layer of heat insulative material, and a second layer of heat insulative material positioned between said reflective surface and said bottom portion of said tray.

4,214,575

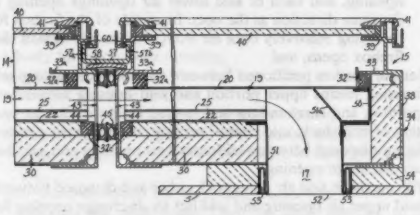
SOLAR ENERGY COLLECTOR

Thomas P. Hopper, Durham, Conn., assignor to Sunworks, Inc., Guilford, Conn.

Continuation-in-part of Ser. No. 854,153, Nov. 23, 1977. This application Jan. 24, 1979, Ser. No. 6,004

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—450 **16 Claims**



1. In a solar collector of the air heat exchange type including a housing member in which the air passes through a duct whose upper surface is an absorber, and where the air passes from one collector to another, the improvement comprising means defining an air duct in said housing out of thermal conductive contact with said housing, said housing having openings in at least one side wall thereof, said duct extending between said housing openings with the ends of the duct very close to but out of contact with the edges defining said openings, the ends of said duct being aligned with said openings, a thermally insulating resilient sealing member surrounding said openings at the edges thereof and secured to said housing, whereby when two of said collectors are joined with the openings aligned, said sealing means compressively and resiliently engages and provides an air seal about said openings and ducts in said housings are aligned and in direct communication across said openings.

4,214,576

APPARATUS FOR BODY MASSAGE USING A FLUIDIZED BED APPARATUS

Ernest J. Henley, 359 Westminster, Houston, Tex. 77024

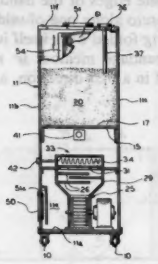
Filed Oct. 11, 1977, Ser. No. 840,754

Int. Cl.[2] A61H *29/00*

U.S. Cl. 128—24.1 **16 Claims**

1. Apparatus for therapeutic massage of parts of the human body comprising a cabinet, a chamber in said cabinet, said chamber having a porous bottom wall and side walls together defining a space, a mass of solid particles contained in said space to constitute a bed in which the body part may be immersed, means to force gas upwardly through the porous wall and bed to create and maintain an ebullient condition of the particles, a tubular member through which the body part may be passed into the chamber for immersion in the bed, said

member extending from one of said side walls, the axis of the tubular member being at an angle upwardly from the horizontal, the highest point of the interior of the tubular member



being above the highest level of the mass when in a turbulent state to preclude escape of the particulate matter outwardly through the member.

4,214,577

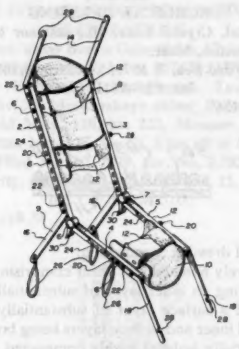
ORTHOSIS FOR EXERCISING JOINT

Mansell I. Hoy, R.R. #1, Oxford Mill, Ontario, Canada

Filed Feb. 27, 1978, Ser. No. 881,664

Int. Cl.[2] A61H *1/02*

U.S. Cl. 128—25 R **8 Claims**



1. An orthosis for passive or active movement of a joint of a body limb comprising:

(a) spaced pairs of proximal and distal shafts for medial and lateral positioning about the proximal and distal parts of the limb at each side of the joint, cooperating proximal and distal shafts being joined at a pivot, the pivots to be juxtaposed the joint and permit pivoting of the distal shafts in a direction corresponding to the direction of movement of the distal part of the limb with lugs projecting outwardly away from the limb along the sides of the shaft;

(b) limb holding means secured between opposite proximal and opposite distal shafts for releasably securing the orthosis to proximal and to distal parts of the limb;

(c) a plurality of lever arms fixed to and extending away from portions of the proximal and distal shafts;

(d) linear biasing means to be releasably secured by and extending between selected lugs or lever arms to join proximal and distal shafts, and so secured by the lugs or lever arms that they exert either flexion or extension torque about the pivots on the proximal shafts without the necessity of repositioning the securing means, the shafts, lever arms and lugs being provided with means to permit the lever arms and lugs to be adjustably secured to the shafts at various positions along the lengths of the shafts, whereby the torque exerted by the biasing means may be adjusted.

4,214,578

ORTHOPEDIC BANDAGE HAVING IMPROVED CONFORMABILITY

Spiros Gianakakos, Highland Park, and Franklin Boardman, Englishtown, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Nov. 18, 1977, Ser. No. 852,766

Int. Cl.[2] A61L *15/07*

U.S. Cl. 128—90 **8 Claims**

1. An orthopedic bandage having improved conformability which comprises a cast forming composition supported on a flexible carrier, said cast forming composition including a water-soluble solid, vinyl monomer, a catalyst capable of polymerizing said monomer in the presence of water, and a 1,2 ditertiary glycol.

4,214,579

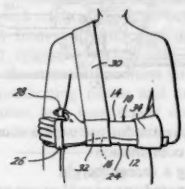
DYNAMIC SHOULDER, FOREARM, WRIST AND HAND SUPPORT

Cynthia A. Ford, 802 NW. 15, Bentonville, Ark. 72712

Continuation-in-part of Ser. No. 729,223, Oct. 4, 1976, abandoned. This application Aug. 23, 1978, Ser. No. 936,301

Int. Cl.[2] A61F *5/40, 5/04, 5/10*

U.S. Cl. 128—94 **4 Claims**



1. A dynamic support for supporting the shoulder, forearm, wrist and hand of a patient comprising,

a splint molded from a thermoplastic material rigid enough not to be deformable at ambient temperatures by pressures exerted by muscle bellies and volar surfaces of the forearm, the wrist and the hand, fingers and thumb, the splint having a forearm supporting portion, a wrist supporting portion, and a hand supporting portion,

the forearm supporting portion's top being open and its bottom being generally semi-circularly shaped to encircle the ulna side of the forearm and to encompass and to exert a constant pressure on the volar surface of the forearm, said forearm support having an edge extending laterally and shaped to wrap around and support the ulna, while placing no inhibiting pressure on the forearm,

the wrist supporting portion being shaped to fit against the inner surface of the wrist and support the wrist in a position of from about 9° to about 21° hyperextension,

the hand supporting portion being shaped to fit against the volar surfaces of the hand, fingers and thumb, and to support the metacarpal-phalangeal joints in a position from about 14° to about 26° flexion, to support the proximal and distal interphalangeal joints at full extension, and having a thumb supporting portion in a position from about 29° to about 41° abduction and opposition,

a first strap adapted to snugly fit about the hand supporting portion and the hand at the metacarpal joints thereby supporting the palmar arch,

a second strap adapted to fit about the thumb and thumb supporting portion, and

an elastic strap having forward and rearward elastic loops at

its lower ends disposed about each end of the forearm supporting portion, when providing support said elastic strap extends diagonally from the forward loop in front of the chest, over the shoulder opposite the arm being supported, across the back and between the upper arm and the rib cage of the patient to the rearward loop,

the elastic strap extending as described above supports the forearm, wrist and hand in a position such that the vola of the hand being supported faces toward the patient's body thus permitting the patient to move the shoulder and elbow of the arm being supported,

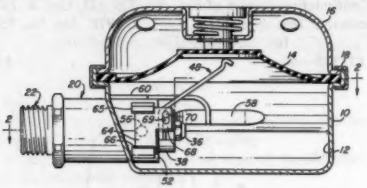
the elastic loops are provided with quick makeup and release connectors at their ends so as to be adjustably securable and thereby capable of firmly holding the forearm against the forearm supporting portion.

4,214,580

BREATHING APPARATUS

Vernon G. Pedersen, Chicago, Ill., assignor to Dacor Corporation, Northfield, Ill.

Filed May 1, 1978, Ser. No. 901,456
Int. Cl.[2] B63C *11/22*; A62B *7/04*
U.S. Cl. 128—204.26 **9 Claims**



1. Breathing apparatus for use with a source of compressed air, comprising in combination

a housing having a recess therein

a diaphragm mounted across said recess to define a chamber in said housing,

a breathing port opening through said housing into said chamber,

an air valve mounted to said housing and having an air inlet for connection to said source of compressed air and an air outlet port disposed to direct a stream of air from said outlet port into said breathing port thereby to develop a venturi action in said regulator by educting air from said chamber,

a valve element in said air valve movable between a fully open position and a fully closed position,

actuator means connected between said valve element and said diaphragm for moving said valve element between said fully closed and said fully open positions in response to the movement of said diaphragm,

baffle means mounted for sliding movement across said outlet port, and

means connecting said baffle means to said actuator means whereby said baffle is moved over said port as said valve element is moved toward said fully open position.

4,214,581

FOLDABLE FIRST-AID DRESSINGS WITH EQUAL BANDAGE AND COMPRESS WIDTHS

Bertil N. Bergman, Skogsgränd 10, S-952 00 Kalix, Sweden

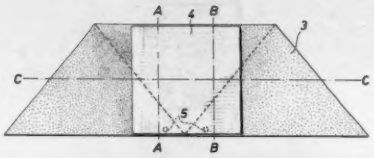
Filed May 26, 1978, Ser. No. 909,856
Claims priority, application Sweden, Jun. 15, 1977, 7706963
Int. Cl.[2] A61F *13/00*
U.S. Cl. 128—155 **6 Claims**

1. A first-aid medical dressing, comprising:

(a) a bandage member having two laterally opposite, parallel, longitudinally oriented edges, and being elastically stretchable in the longitudinal direction,

(b) a rectangular compress centrally arranged on said bandage member with opposite ones of its edges aligned with the laterally opposite edges of the bandage member, and being attached thereto along one of said aligned edges,

(c) the compress being folded over itself in the longitudinal direction of the bandage member to at least a double thickness by a fold in a first direction, and



(d) the bandage member being folded under itself in the longitudinal direction thereof to at least a double thickness in a central area thereof coextensive with said compress by a fold in a second, opposite direction,

(e) whereby the bandage member and compress may be unfolded to twice their widths with the compress still extending across the full width of the bandage member.

4,214,582

SURGICAL DRESSING

Harish A. Patel, Crystal Lake, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Feb. 7, 1979, Ser. No. 10,103
Int. Cl.[3] A61L *15/00*
U.S. Cl. 128—156 **7 Claims**

1. A surgical dressing, comprising:

a first relatively nonadherent sheet comprising a nonwoven fabric having an inner layer of substantially hydrophilic fibers, and a surface layer of substantially hydrophobic fibers, said inner and surface layers being bonded together in substantially isolated highly compacted areas defining adjacent regions of substantially less compaction; and

a second relatively absorbent sheet comprising an open-mesh, bulked, multi-layered, woven fabric with threads of the fabric being distorted into sinuous and tortuous configurations, said first and second sheets being laminated together to form the dressing with the surface layer of the first sheet facing outwardly from the dressing.

4,214,583

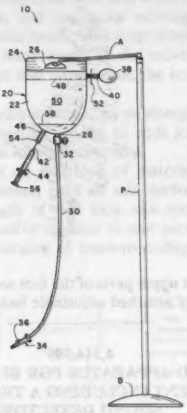
SURGICAL WASH SYSTEM

Manoochehr Arfaa, 202 Glenwood Ave., Bel Air, Md. 21014

Filed Mar. 9, 1979, Ser. No. 19,237
Int. Cl.[3] A61M *5/00*
U.S. Cl. 128—214 F **7 Claims**

1. In a surgical wash system having a reservoir for hanging from a support such as an I.V. pole, flexible tubing for discharging fluid from the reservoir, means associated with the flexible tubing for controlling discharge of fluid from the reservoir including a nozzle for directing fluid discharged from the reservoir, the improvement comprising: the reservoir being a closed container having a flexible wall, and said means for controlling including micro-control means for varying the pressure within the closed container, said micro-control pres-

sure varying means including penetrable valve structure in said flexible wall for admission of the needle of a hypodermic



syringe for passage of fluid therethrough under urging of said a hypodermic syringe.

4,214,584

DEVICE FOR ADMINISTERING MEDICINAL PREPARATIONS

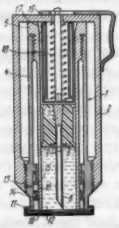
Boris A. Smirnov, ulitsa Borisa Galushkina, 17, kv. 28; Vyacheslav N. Mochalov, prospekt Mira, 122, kv. 174, both of Moscow; Valery P. Busygin, Krasnogorsk, Zheleznodorozhny proezd, 13, kv. 25, Moskovskaya oblast; Rustam I. Utyamyshev, prospekt Mira, 118, kv. 222, Moscow, and Alexei I. Semenov, ulitsa Mira, 26, kv. 53, Klin, all of U.S.S.R.

Filed Jan. 10, 1979, Ser. No. 2,702

Claims priority, application U.S.S.R., Jan. 11, 1978, 2567610

Int. Cl.[2] A61M *5/00*

U.S. Cl. 128—218 M **2 Claims**



1. A device for administering medicinal preparations, comprising:

a housing;

an isolated capsule movably mounted inside said housing;

a piston movably mounted inside and coaxially with said isolated capsule and providing one wall of the chamber for a first medicinal preparation accommodated within said isolated capsule;

an injection needle made fast on said piston and having a hole located at the base of the piston;

a chamber for a second medicinal preparation accommodated in said isolated capsule and arranged concentrically to said chamber for the first medicinal preparation and embracing the latter, both of said chambers getting intercommunicated upon a positive extension of said isolated capsule from said housing outwards;

a mechanical actuator of said piston made as a spring-opposed pushrod and located in said housing;

a retaining member for said spring-opposed pushrod, provided in said housing.

4,214,585

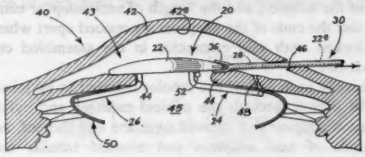
TOOL FOR SURGICAL IMPLANTATION OF AN INTRAOCULAR LENS

Paul F. Bailey, Jr., 4885 NW. Barnes Rd., Portland, Oreg. 97210

Filed May 15, 1978, Ser. No. 905,574

Int. Cl.[2] A61F *9/00, 1/16, 1/24*

U.S. Cl. 128—303 R **3 Claims**



1. An intraocular lens for surgical implantation in the eye comprising:

a lens body;

positioning means extending from said lens body for orienting said lens body in the eye's anterior chamber; and

retaining means including a resilient member joined to said lens body for extending outwardly from a marginal portion thereof, said resilient member being elastically deformable away from said positioning means to a stressed condition and releasable, when said lens body is implanted, from the stressed condition so that it may move toward said positioning means and assume a predetermined orientation in a nonstressed condition extending into the iris to thereby attach the iris to said lens body.

4,214,586

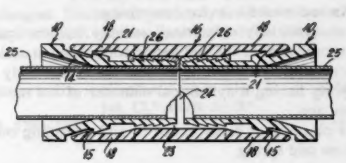
ANASTOMOTIC COUPLING DEVICE

Robert W. Mericle, Bridgewater, N.J., assignor to Ethicon, Inc., Sumerville, N.J.

Filed Nov. 30, 1978, Ser. No. 965,448

Int. Cl.[2] A61B *17/04*; F16L *17/00, 19/00, 21/02*

U.S. Cl. 128—334 R **20 Claims**



1. A three-piece anastomotic coupling device for end-to-end anastomosis of tubular members comprising two adaptors and a connector, each of said adaptors comprising a cylinder having an axial bore therethrough sized to receive one tubular member with the end of said member everted over the end of said adaptor,

said connector comprising a cylinder having an axial bore therethrough sized to receive each of said adaptors and the tubular member everted thereover in opposing ends of said cylinder with the everted ends of the tubular members in abutting contact within said cylinder, and

means for interlocking said adaptors and said connector to maintain the everted ends of the tubular members in contact.

12. A three-piece anastomotic coupling device for joining the severed ends of a tubular member comprising two adaptors and an interlocking connector, each of said adaptors compris-

ing a cylinder having an axial bore therethrough terminating at one end in a plane normal to the axis of the bore and at the other end in an expanding truncated conical member, means on the exterior surface of said conical member for interlocking with corresponding means on said connector piece, and means on the exterior surface of the plane end of said cylinder for gripping a tubular member everted thereover,

said connector comprising a cylinder having an axial bore therethrough, and terminating at each end in appendages extending thereform and having means on the interior surfaces at the distal ends thereof for interlocking with corresponding means on said adaptors,

the inside diameter of the cylinder of said connector being larger than the maximum outside diameter of the cylinder of the adaptor, and the length of each adaptor being such that the ends of the adaptors are spaced apart when interlocked with said connector in the assembled coupling device,

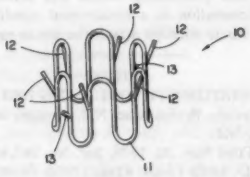
whereby each end of the tubular member to be joined may be passed through the conical member and cylinder of each adaptor and everted over the end thereof, and said ends of said adaptors and everted tubular members thereon may be inserted into opposite ends of said connector and interlocked therewith with the intimal surfaces of the everted tubular members abutting one another.

4,214,587

ANASTOMOSIS DEVICE AND METHOD

Chester Y. Sakura, Jr., 6417 Esther NE., Albuquerque, N. Mex. 87109

Filed Feb. 12, 1979, Ser. No. 11,448
Int. Cl.[2] A61B *17/04*
U.S. Cl. 128—334 R **29 Claims**



1. An anastomosis device comprising:

(a) an essentially cylindrical, radially resilient spring, the exposed surfaces of said spring comprising material that is compatible for implantation into the human body and said spring having a cylindrical diameter of not more than 1 cm. and

(b) a plurality of barbs joined to and extending outwardly from said spring.

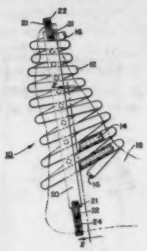
4,214,588

FOOT WARMING DEVICE

William H. Byler, Winter Park, Fla., assignor to William H. Byler, Revocable Trust, Sarasota, Fla., William H. Byler and Thelma T. Byler, Trustees

Filed Apr. 18, 1978, Ser. No. 897,248
Int. Cl.[2] A61F *7/00*
U.S. Cl. 128—402 **10 Claims**

1. A foot warming device which comprises, in combination, a plurality of lengths of a flexible elastic tubing adapted to contain a liquid having a high specific heat capacity, each length of tubing being substantially coextensive with and disposed in parallel relation to other lengths of tubing, means for supporting each length of tubing in a disposition for contacting a substantial surface of the foot to be warmed, elastic means connected to said supporting means adapted for removable securement of said tubing in said foot contacting position, and one or more flexible bands having high heat conductivity



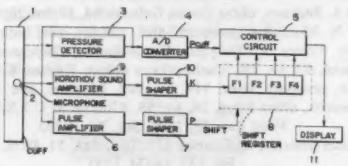
conformed about upper parts of the foot and secured in contact with the tubes by attached adjustable bands.

4,214,589

METHOD AND APPARATUS FOR BLOOD PRESSURE MEASUREMENT INCLUDING A TRUE KOROTKOV SOUND DETECTOR

Tamaki Sakamoto, Nagaokakyo, and Yasunori Ikeda, Kameoka, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Dec. 29, 1977, Ser. No. 865,449
Claims priority, application Japan, Sep. 14, 1977, 52/111136
Int. Cl.[2] A61B *5/02*
U.S. Cl. 128—680 **14 Claims**



1. A method for determining the presence of true Korotkov sounds for use in a blood pressure measurement system comprising the steps of:

detecting sequentially occurring heart pulse signals and Korotkov sounds emitted from a body,

determining when any detected heart pulse signal occurs in time synchronism with a detected Korotkov sound,

examining four successively detected heart pulse signals and any associated time synchronized detected Korotkov sounds to determine whether three or four Korotkov sounds were time synchronized with said four detected heart pulse signals, and

determining that each of the Korotkov sound signals associated with said four detected heart pulse signals is a true Korotkov sound signal when three or four time synchronized Korotkov sound signals are found in said examination.

4,214,590

METHOD AND APPARATUS FOR PROCESSING AND DISPLAYING DATA IN COMPRESSED FORM

Charles M. Patnoi, Golden; Daniel Cooper, Denver, and Robert D. Zellers, Lakewood, all of Colo., assignors to International Medical Corporation, Englewood, Colo.

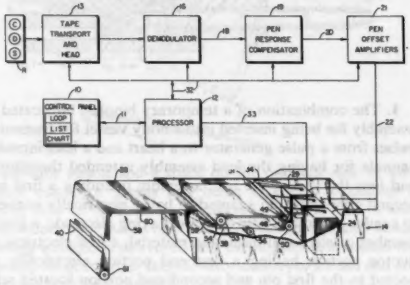
Filed Nov. 28, 1977, Ser. No. 855,210
Int. Cl.[2] A61B *5/04*
U.S. Cl. 128—710 **12 Claims**

1. In a compressed data recording system including sensing means for generating electrical signals representing the ECG level of the patient, playback means responsive to the signals

generated to reproduce waveforms of said signals at a predetermined rate of speed, a plurality of write heads, a movable recording medium associated with said write heads for recording said waveforms, and means for moving said recording medium past said write heads, said write heads being disposed at spaced intervals transversely of the movement of said recording medium past said write heads, the improvement comprising:

said recording medium defined by an elongated flexible strip of recording material having its ends joined together to form an endless loop of material;

a writing surface on said loop of material divided into a plurality of sectors, each of said sectors extending the substantial length of said loop and arranged in closely spaced, coextensive relation to one another, each sector providing a plurality of trace-recording channels there-



across for the graphical representation of said waveforms by each write head along the substantial length of said respective channel, the number of sectors corresponding to the number of write heads; and

means for aligning each write head adjacent to one lateral edge of an associated sector, activating means for activating each write head in succession to form a graphical representation of the waveform reproduced by said playback means lengthwise of each sector as said recording medium is advanced past said write heads, shift means for laterally shifting said activated write head each time that said activated write head traverses and records the trace along the substantial length of its associated sector, each write head being activated in response to the recording of a predetermined number of traces in laterally spaced relation to one another by a preceding adjacent write head across said adjacent write head's associated sector.

4,214,591

BRAIN WAVE ANALYZING SYSTEM AND METHOD

Kensuke Sato, Nagayo, and Kenji Ono, Isahaya, both of Japan, assignors to Foundation for the Medical Research on the Traffic Accident and Disaster, Tokyo, Japan

Filed Apr. 18, 1978, Ser. No. 897,411
Claims priority, application Japan, Oct. 8, 1977, 52-121109
Int. Cl.[2] A61B *5/04*
U.S. Cl. 128—731 **8 Claims**

1. A brain wave analyzing system, comprising:

an electroencephalograph for detecting brain waves;

an A-D converter coupled to said electroencephalograph for converting the detected brain waves from said electroencephalograph into digital data;

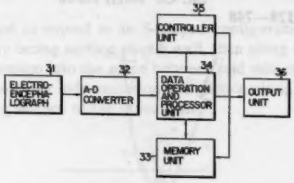
a data operation and processor unit coupled to said A-D converter for calculating and processing said digital data from said A-D converter;

a memory unit for storing decision-criterion data for criticizing any brain wave supplied to said A-D converter and data obtained during the calculating and processing steps of said operation and processor unit;

a controller unit for controlling said data operation and processor unit and said memory unit; and

an output unit coupled to said data operation and processor unit for displaying or recording the output of said data operation and processor unit;

said memory unit including means for storing, as said decision-criterion data for any brain wave to be examined, a mean vector A, a variance vector C and at least one significant level F_α obtained from F-distribution, said mean vector A being the mean value of autoregressive coefficient vectors calculated by said data operation and processor unit from respective brain waves of the standard brain wave group comprising K number of standard brain waves, said variance vector C being calculated as a function of said mean vector and said autoregressive coeffici-



ents, and said F-distribution being a distribution of a distance between said mean vector A and a row vector X obtained from a given brain wave belonging to said standard brain wave group;

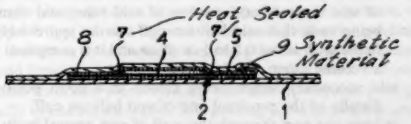
said data operation and processor unit including means for calculating an L-dimensional row vector X of the brain wave to be examined from the autoregressive coefficients of said brain wave to be examined, means for calculating the distance F_X between said row vector X and said mean vector A, means for comparing the value of said distance F_X with said significant level F_α stored in said memory unit, and means responsive to said comparing means for producing a decision output to indicate according to the result of said comparison whether or not the pattern of said brain wave to be examined has a significant level different from that of said standard brain wave group.

4,214,592

PATCH FOR SKIN TESTS

Pierre Jacquet, Tassin la Demi Lune, and Micha Roumiantzeff, Lyons, both of France, assignors to Institut Merieux, Lyons, France

Filed Dec. 29, 1977, Ser. No. 865,511
Claims priority, application France, Dec. 31, 1976, 76 39710
Int. Cl.[2] A61B *10/00*
U.S. Cl. 128—743 **17 Claims**



1. In a patch test for administration of a standardized, precise dose, of reactive material to skin to determine sensitivity to said reactive material; the improvement comprising, in combination:

a first metal foil layer laminated on the inner side thereof with a layer of synthetic impermeable material,

an absorbent disc means, containing a dose of a test substance, positioned on said layer of synthetic material spaced inwardly of the edges of said first metal foil layer,

a second metal foil layer overlying the absorbent disc means and being heat sealed to the layer of synthetic material on

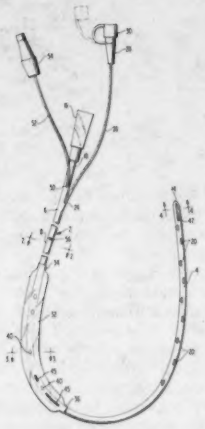
said first metal foil layer by a continuous peripheral heat seal located substantially immediately adjacent the peripheral edge of the absorbent disc means, to provide a sealed pouch means for protecting the dose of test substance in the absorbent disc means from light and also against leakage of the dosage of the test substance in the absorbent disc means beyond said heat seal adjacent the absorbent disc means.

4,214,593

ESOPHAGEAL PRESSURE MONITORING DEVICE

Richard Imbruce, Norwalk, Conn., and Nelson E. Leatherman, Chapel Hill, N.C., assignors to Mallinckrodt, Inc., St. Louis, Mo.

Filed Sep. 18, 1978, Ser. No. 943,445
Int. Cl.[2] A61B *10/00*
U.S. Cl. 128—748 **5 Claims**



1. An esophageal pressure monitoring nasogastric tube comprising

a distal end portion that terminates in a rounded tip,

a proximal end portion that terminates in tube connector means,

a central body portion joining the distal end portion to the proximal end portion,

a major lumen extending within said tube from said tip to said tube connector means,

a plurality of side ports through said distal end portion communicating with said major lumen,

a secondary lumen extending longitudinally within said tube,

a very thin balloon cuff having a length substantially longer than the diameter thereof sealed at its ends to the outside of said central body portion of said tube, said diameter being such that said balloon cuff can be appreciably inflated with about 0.5 to 1 cc of air and it is compliant over a volume range of 0 to 4 ml.,

said secondary lumen being closed at a point positioned distally of the proximal end of said balloon cuff,

at least one port through the wall of said central body portion communicating said secondary lumen with the interior of said balloon cuff for flow of fluid from said secondary lumen into said balloon cuff,

a first opening in the wall of said proximal end portion of said tube communicating with said secondary lumen,

a first connector tube fixed to said first opening for introduction of fluid into said secondary lumen,

a tertiary lumen extending longitudinally within said tube,

said tertiary lumen opening at its distal end into said major lumen adjacent said rounded tip of said tube providing a passage to vent said tube to prevent excessive vacuum from developing when suction is applied to said major lumen,

a second opening in the wall of said proximal end portion of said tube communicating with said tertiary lumen, and

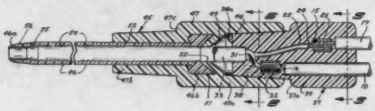
a second connector tube fixed to said second opening for introduction of fluid into said tertiary lumen.

4,214,594

TEMPORARY PACEMAKER LEAD APPARATUS

Richard L. Little, Minneapolis, Minn., assignor to Daig Corporation, Minnetonka, Minn.

Filed Oct. 6, 1978, Ser. No. 949,088
Int. Cl.[3] A61N *1/04*
U.S. Cl. 128—786 **4 Claims**



1. The combination of a temporary bipolar, bifurcated lead assembly for being inserted into a body vessel for transmitting pulses from a pulse generator to a heart and a lead introducer cannula for having the lead assembly extended therethrough and into the vessel, the lead assembly including a first and a second connector pin adapted to being electrically connected to a pulse generator, a tip electrode, a ring electrode, a junction member of electrical insulating material, a first electrical conductor portion having a first end portion electrically connected to the first pin and second end portion located within the junction member, a second electric conductor portion having a first end portion electrically connected to the second pin and a second end portion located within the junction member, an elongated third electric conductor portion having a first end portion electrically connected to the first conductor portion second end portion, an intermediate portion extending through the ring electrode and a second end portion electrically connected to the tip electrode, an elongated fourth conductor portion having a first end portion electrically connected to the second conductor portion second end portion and a second end portion electrically connected to the ring electrode, the length of the third and fourth conductor portions from the junction member to the ring electrode being many times greater than the axial length of the cannula, the cannula and junction member having cooperating engaging means for selectively releasably retaining the cannula remote from the ring electrode, the cooperating means including a frusto conical junction member cannula engageable surface portion and a frusto conical peripheral cannula surface portion for forming a friction fit with the engageable surface portion to releasably retain the cannula on the junction member surface portion.

4,214,595

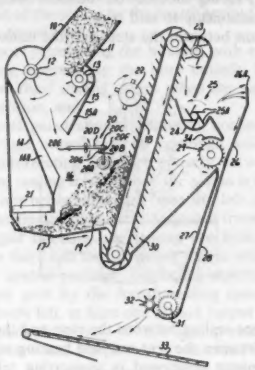
CIGARETTE MAKING MACHINES

Francis A. M. Labbe, Neuilly-sur-Seine, France; Jan A. Rakowicz, and Ronald A. Ahern, both of London, England, assignors to Molins Limited, London, England

Filed Jun. 2, 1977, Ser. No. 802,854
Claims priority, application United Kingdom, Jun. 3, 1976, 22902/76
Int. Cl.[3] A24C *5/18*
U.S. Cl. 131—108 **34 Claims**

1. In a hopper for a cigarette making machine comprising means defining a downwardly extending channel, means for delivering tobacco through the upper end of said channel to form a column of tobacco in the channel, means for continuously feeding tobacco from the lower end of the channel, filler forming means spaced from one side of said channel, conveyor means running below said channel and from said one side

thereof towards said filler forming means for receiving the tobacco delivered from the lower end of the channel and feeding the tobacco in a direction away from said one side of said channel to said filler forming means, elevator conveyor means at said one side of said channel, said elevator conveyor means being positioned between said channel on one side of



said elevator means and a space on the opposite side of said elevator conveyor means and being arranged to deliver a metered flow of tobacco from said space on the side of said elevator conveyor means opposite said channel and into which incoming tobacco is delivered into the hopper, and means for removing tobacco from said elevator conveyor means and for delivering it to said channel.

4,214,596

PERMANENT WAVE SYSTEM USING AMMONIUM BISULFITE PREWRAP

Julius F. Kaplan, Highland Park; Norman L. Edelberg, Vernon Hills, and Chester A. Davis, Berwyn, all of Ill., assignors to Helene Curtis Industries, Inc., Chicago, Ill.

Filed Jul. 31, 1978, Ser. No. 929,326
Int. Cl.[2] A45D *7/00*
U.S. Cl. 132—7 **9 Claims**

1. In the method of treating of hair in which water-wet hair is wrapped around rollers, an aqueous mercaptan-containing solution having a pH not higher than about 6.9 is applied to the hair on the rollers to cleave disulfide bonds in said hair, and the mercaptan-wetted hair is thereafter neutralized with an oxidizing agent to reform disulfide bonds in said hair, the improvement which comprises wetting said hair, prior to said wrapping thereof, with an aqueous solution of a prewrap agent of the group consisting of alkali metal and ammonium sulfites and alkali metal and ammonium bisulfites, said prewrap agent being present in said aqueous solution at a concentration of about 0.1 Molar to about 1.0 Molar, said prewrap agent being at a strength and applied for a period such that no more than about 5% of the disulfide bonds in said hair are cleaved by said prewrap agent prior to said application of said mercaptan-containing solution and being maintained on said hair during the application of said mercaptan-containing solution.

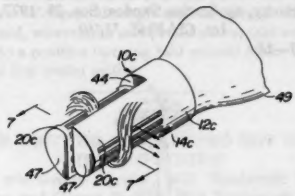
4,214,597

HAIR WAVING METHOD AND DEVICE

Geraldine Glassman, 135 E. 50th St., Apt. 6C, New York, N.Y. 10022

Filed Nov. 22, 1977, Ser. No. 853,892
Int. Cl.[2] A45D *20/00*
U.S. Cl. 132—9 **10 Claims**

1. A hair waving device comprising a connector part, a pair of spaced walls extending longitudinally of each other from one side of said connector part, said walls having their oppositely outwardly facing surfaces smoothly transversely convex, and a reversely bent convexly smooth side extension on each of said walls extending into the space between said walls and into facing spaced relation with each other, said side extensions merging smoothly with respective walls, whereby a tress of



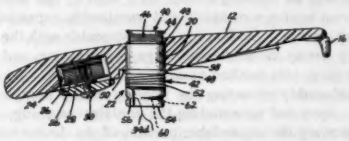
hair is adapted to extend in an S-shaped configuration along the outwardly facing surface of one wall, then along the adjacent side extension into the space between said side extensions and along the other side extension and thence along the outwardly facing surface of the other wall.

4,214,598

DENTAL FLOSS APPLICATOR

Lawrence L. Lee, c/o Dr. C. J. Gerritsma, N.V. Philips' Gloeilampenfabrieken Research Laboratory, Eindhoven, Netherlands

Filed Oct. 13, 1978, Ser. No. 951,190
Int. Cl.[3] A61C *15/00*
U.S. Cl. 132—92 R **15 Claims**

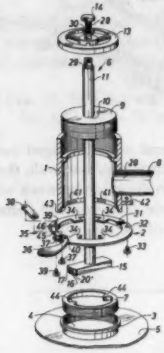


1. A dental floss applicator for use in dispensing and supporting a strand of dental floss under tension for cleaning the teeth comprising an elongated supporting frame having on one end two spaced furcations laterally extending therefrom, tips on said furcations having floss-guiding portions by means of which a floss strand may be tensioned therebetween, a capstan device mounted for rotation on said frame with supply and takeup capstan portions axially spaced thereon and a common support, floss on said frame, said take-up capstan portion being of larger circumference than said supply capstan portion, a supply of floss carried by said frame and means for guiding floss therefrom to said supply capstan portion, means for guiding said floss around said supply capstan portion in one circumferential direction when viewing said take-up capstan portion directly to and between said floss-guiding portions, back to and around said take-up portion in the opposite circumferential direction when viewing said takeup capstan portion directly, whereby rotation of said capstan device in a direction to wind floss onto said supply capstan portion causes advancement of floss between said floss-guiding portions, the difference in circumference of the supply and take-up capstan portions tensioning the floss strand between said floss-guiding portions and maintaining such tension substantially constant upon successive adjusting advancements of said floss while providing for opposed torques on said supply and take-up capstan portions which are substantially equal.

4,214,599
DEVICE FOR USE IN CONNECTION WITH TAPPING OFF FLUID FROM OR FILLING FLUID INTO A CONTAINER

Erik J. H. Åström, Kärrvägen 26, 135 00 Tyresö, Sweden

Filed Sep. 29, 1978, Ser. No. 947,091
Claims priority, application Sweden, Sep. 29, 1977, 7710928
Int. Cl.[2] F16L *55/10*
U.S. Cl. 137—15 8 Claims



7. A method of removing fluid from a container of the type having an internally threaded opening formed in the top of the container and an externally threaded generally cup-shaped plug closing the opening and having an outwardly open cavity for receiving a mechanism for rotating and removing the plug from the opening, the method using an open-ended housing having an internal passageway extending between the open-end and an opening formed in a wall of the housing, and a device having a rotatable and translatable expandable portion positionable in the housing and engageable with the wall of the plug cavity for frictionally engaging, rotating, and translating the plug, said method comprising:

releasably mounting the housing on the container with its open end surrounding the container opening;

moving the expandable portion of the device into the plug cavity;

rotating at least a portion of the device so that the expandable portion expands into contact with and frictionally engages the wall of the plug cavity;

rotating at least a portion of the device so that the frictionally engaged plug is rotated and removed from the container opening; and

translating the device so that the plug is moved into a positon permitting fluid flow between the container and housing openings.

8. A method according to claim 7, wherein the same portion of the device is rotated to both expand the expandable portion and to rotate the plug.

4,214,600
VALVE

Leonard E. Williams, Jr., and William M. Taylor, both of Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Feb. 15, 1979, Ser. No. 12,383
Int. Cl.[2] F16K *41/02, 17/38*
U.S. Cl. 137—72 11 Claims

1. A valve, comprising

a body having a chamber open on the top and a passage extending through the body and in communication with the chamber,

a valve member movable in the chamber to open and close flow through said passage,

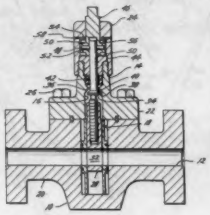
a bonnet having a central bore with a seat facing downward within said bore,

means securing the bonnet to the body around the chamber opening,

a stem extending through said bonnet bore and threadedly engaging said valve member,

an upwardly facing shoulder on the stem being normally in spaced relationship to said seat,

bearing means between the stem and the bonnet,



packing means sealing between the stem and the bonnet at a position between the seat and said bearing means,

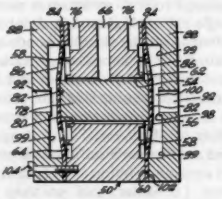
a fusible element positioned in supporting relationship to said bearing means and normally retaining the stem shoulder spaced from the bonnet seat,

said fusible element being adapted, when heated, to relax its support of said bearing means so that the stem shoulder seats on the bonnet seat to prevent leakage around the stem whereby failure of said packing means as a result of heat does not ressult in fluid leakage around the stem.

4,214,601
SIMULTANEOUS ACTUATION SAFETY VALVE

Nicholas Sama, 19120 Bel Aire Dr., Miami, Fla. 33157

Continuation-in-part of Ser. No. 808,376, Jun. 20, 1977, Pat. No. 4,136,601. This application Jan. 29, 1979, Ser. No. 7,374
The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.
Int. Cl.[2] F16K *17/00*
U.S. Cl. 137—102 5 Claims



1. A fluid power device comprising:

a housing having an axial bore;

at least one end cap sealing the housing bore;

a piston having a left end and a right end in coaxially movable internal relationship with and of lesser axial length than the housing bore, said lesser axial length defining piston travel, left and right, with the piston containing four circumferential grooves;

four circumferential sealing means captured by the grooves and in movable sealing relationship with the housing bore, said sealing means denominating respectively a first sealing means, proximal the left piston end, a second sealing means, a third sealing means and a fourth sealing means, proximal the right piston end;

resilient urging means to urge said piston to a neutral position in the housing bore;

left and right input ports penetrating the housing, said input ports having input internal openings intersecting the bore which respectively straddle the first and fourth sealing means when the piston is in the neutral position, wherein the left input port will be separated from the right end of the piston by the first sealing means when the piston travels right, and the right input port will be separated from the left end of the piston by the fourth sealing means when the piston travels left;

an exhaust port penetrating the housing with exhaust internal opening intersecting the bore entirely between the second and third sealing means when the piston is in the neutral position; and

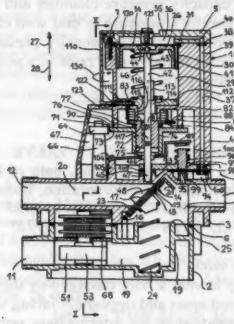
an output port penetrating the housing connected to both left and right output internal openings, said left output opening intersecting the bore entirely between the first and second sealing means when the piston is in the neutral position, but being separated from the left input port by the first sealing means when the piston travels right, said right output opening intersecting the bore entirely between the third and fourth sealing means when the piston is in the neutral position, but being separated from the right input port by the fourth sealing means when the piston travels left, at least one of said output openings not being separated by any of the sealing means from the exhaust port when the piston travels either left or right.

4,214,602

LIQUID DISTRIBUTOR, NOTABLY FOR SPRINKLING PURPOSES

Michel Pradillon, Cluses, France, assignor to Etablissements Carpano & Pons, Cluses, France

Filed Jun. 1, 1978, Ser. No. 911,321
Claims priority, application France, Jun. 6, 1977, 77 17968
Int. Cl.[2] A01G *27/00*
U.S. Cl. 137—119 **24 Claims**



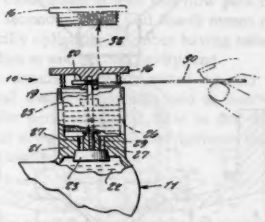
23. A distributor for controlling the dispensing of a liquid, notably for sprinkling systems and the like, of the type comprising an inlet orifice and two outlet orifices, a spring-loaded valve closing the second outlet orifice in the inoperative condition while leaving the first outlet orifice open, a volumetric metering device adapted to actuate said valve against its spring-loading for closing said first outlet orifice and simultaneously opening said second outlet orifice when a predetermined quantity of liquid has passed through said first outlet orifice, said volumetric metering device comprising a cylinder and a piston slidably fitted in said cylinder, said piston defining with its first face and the bottom of said cylinder a chamber connected via a passage to said inlet orifice and supporting with its opposite face a rod so disposed that said valve lies in the path of its axial movement, resilient means constantly urging said piston toward the bottom of said cylinder, whereby fluid entering said chamber from said inlet acts to move said piston and rod in a direction to move said valve to a position opening said second outlet orifice and closing said first outlet orifice, said volumetric metering device further comprising control means for blocking said movement of said piston and rod, a turbine inserted in the liquid circuit between said inlet orifice said first outlet orifice and driving means including speed reducing means kinematically connecting said turbine with said control means to actuate said control means, after a selected flow of liquid through said turbine, to release said piston and rod, whereupon said piston moves said rod to move said valve to a position opening said second outlet orifice and closing said first outlet orifice.

4,214,603

FILTER UNIT FOR A BASEBOARD HOT WATER HEATING SYSTEM

Jim Hall, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Aug. 5, 1977, Ser. No. 791,066
Int. Cl.[2] F16K *24/00*
U.S. Cl. 137—199 **5 Claims**



1. In an improved filter unit for a baseboard hot water heating system, comprising in combination, a valve housing having an intake at one end and an outlet at its other end, an upward extension on said housing having a chamber containing removable filters, an upper end of said chamber having an opening closed by a removable screw cap having a downward element on its underside supporting a downward valve shaft extending through said filters, a lower end of said valve shaft extending through a wall below said chamber and into a water course chamber therebelow where a valve head on said shaft seats in a valve seat on an underside of said wall, a lower portion of said shaft being screw threaded and engaged in a vertical, threaded opening through said wall, and said wall having a plurality of passage openings therethrough opening out on said seat and which are closeable by said head when engaged in said seat.

4,214,604

STRAIGHT THROUGH FLOW DIAPHRAGM VALVE STRUCTURES

Rollin D. Rumsey, 148 Summer St., Buffalo, N.Y. 14222

Filed Feb. 6, 1978, Ser. No. 875,744
Int. Cl.[2] F16K *7/00*
U.S. Cl. 137—375 **12 Claims**

1. A diaphragm valve including a body having a passage therethrough provided with substantially coaxial opposite ends of substantial diameter and means on said body at said opposite ends of the passage for securing the body in a fluent material line to be controlled by the valve, an opening intermediately in said body into the top of said passage, a passage-controlling diaphragm extending across said opening and having a marginal attachment flange, an actuator bonnet secured over said opening and securing said diaphragm flange sealingly in place on an upwardly facing surface extending about said opening, and actuator means carried by said bonnet for operating said diaphragm between retracted fully open position permitting substantially free flow of fluent material through said passage and a fully closed flow-stopping position in substantially seal-

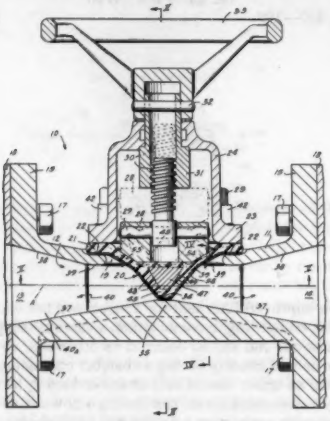
ing engagement with a closing off surface extending across said passage below said opening, the improvement comprising:

said closing off surface comprising a crest on a transverse ridge adjacent the longitudinal axis of the passage and underlying the diaphragm for flow stopping engagement by the diaphragm when driven against the crest by said actuating means;

a bottom surface in said passage sloping upwardly from said opposite ends of the passage to said crest:

top surface areas defining said passage sloping inwardly and downwardly from said opposite ends toward said opening and inner ends of said areas terminating substantially above said longitudinal axis;

and respective side surfaces defining the sides of said passage, each side surface having areas diverging from said opposite ends of the passage and joining a respective substantial length longitudinally extending generally straight side surface portion of the associated side surface adjacent to said opening, said side surface portions being



spaced apart substantially farther than said passage end diameters and having respective intermediate oblique surface areas extending divergently upwardly from the opposite ends of said crest to said upwardly facing surface and providing parts of said closing off surface and adapted to cooperate with said crest for passage-sealing engagement by said diaphragm in its fully closed position;

said side surfaces merging smoothly with said top and bottom surfaces and the spacing of said side surface portions providing increased width for the passage adjacent to said ridge;

whereby the range of control movement of the diaphragm between said fully open and said fully closed positions is minimized by said ridge, but the increased width of the passage adjacent to said ridge compensates for the vertical diminution of said passage by said ridge so that said passage provides a straight through flow path of substantially undiminished cross sectional flow area along said axis when said diaphragm is in said fully open position.

4,214,605

ACTUATOR FOR WIRELINE BLOWOUT PREVENTER

William D. Hardgrave, Carrolton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Jan. 11, 1978, Ser. No. 868,482

Int. Cl.[2] E21B *33/06;* **F16K** *31/363*

U.S. Cl. 137—495 **8 Claims**

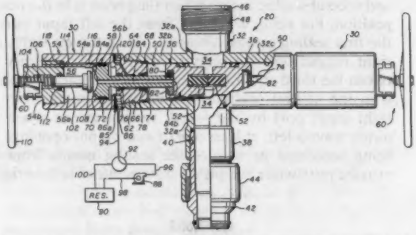
1. In a wireline blowout preventor connectable to a well head having a housing with a vertical flow path for the flow of well fluids under pressure and rams movable transversely in said housing to open and close said vertical flow path, the improvement consisting of actuators for actuating movement of said rams, each actuator comprising:

an actuator having, connectable to said wireline blowout preventor housing, having a longitudinal bore transverse to said vertical flow path,

piston means disposed in said longitudinal bore,

a portion of said longitudinal bore forming a first variable capacity pressure chamber for receiving a pressure fluid from a source outside said actuator housing wherein an increase in pressure therein causes said piston means to move said respective ram to open said vertical flow path,

port means to provide fluid communication between the exterior of said actuator housing and said first variable capacity pressure chamber,



a portion of said longitudinal bore forming a second variable capacity pressure chamber for receiving pressure from said well,

connector means connecting said piston and said ram, having a bore passageway extending therethrough in communication with a bore passageway extending through said piston, providing fluid communication between said second variable capacity pressure chamber and said vertical flow path, whereby a pressure in said well exceeding the pressure in said first variable capacity pressure chamber causes said pistons to move said rams to a position closing said vertical flow path.

4,214,606

SUBSURFACE SAFETY VALVE

Thomas M. Deaton, and Gary A. Kohn, both of Dallas, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed May 8, 1978, Ser. No. 903,785

Int. Cl.[2] E21B *43/12;* **F16K** *31/163*

U.S. Cl. 137—495 **6 Claims**

1. A subsurface safety valve comprising:

(a) a valve body having a bore passageway therethrough,

(b) a pair of spaced apart and oppositely facing valve seats in surrounding relation to an intermediate portion of said bore passageway,

(c) a valve member having an opening therethrough and seatable between said seats for opening and closing said bore passageway upon rotation about an axis transverse to the opening therethrough,

(d) a tubular member extending from one of said valve seats, disposed in the bore passageway of said valve body, forming an annular space within the valve body,

(e) a first variable capacity pressure chamber within said annular space for receiving control pressure fluid from a source external to the safety valve;

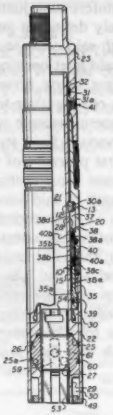
(f) a second variable capacity pressure chamber within said annular space for receiving pressure from the bore passageway of said safety valve,

(g) a control frame longitudinally movable within said annular space, responsive to the greater of pressure in the first or second variable capacity pressure chambers for rotating said valve member to the bore open positions,

(h) a piston slidably disposed between said tubular member

and said control frame having seal means thereon, separating said first variable pressure chamber from said second variable capacity pressure chamber and responsive to pressure in said first variable capacity pressure chamber to allow said piston to move to a first position to coact with said control frame in rotating said valve member to a full bore open position,

(i) single conduit means for conducting control pressure fluid to said first variable capacity pressure chamber, and



(j) port means in said tubular member providing fluid communication between the bore passageway and said second variable capacity pressure chamber to allow pressure to move said piston to a second noncoacting position with said control frame, pressurization of either chamber moving said control frame allowing rotation of said valve member opening said bore passageway,

(k) resilient means for rotating said valve member closing the bore passageway upon reduction of pressure to predetermined value acting on said control frame.

4,214,607

UNIDIRECTIONAL FLOW LIMITER

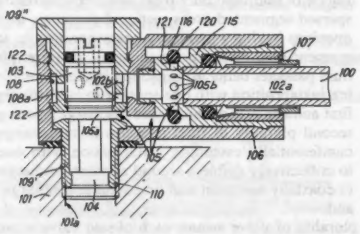
Daniel Bouteille, Marnes-la-Coquette, France, assignor to Societe Anonyme: La Telemecanique Electrique, France

Division of Ser. No. 774,311, Mar. 3, 1977, Pat. No. 4,171,007. This application Jan. 11, 1979, Ser. No. 2,604

Claims priority, application France, Mar. 5, 1976, 76 06384; Mar. 5, 1976, 76 06385

Int. Cl.[2] F16K *11/10, 15/14*

U.S. Cl. 137—499 **18 Claims**



1. A connection element for connection between a fluid pipe and a user apparatus, comprising:

first means for defining a substantially cylindrical first elongated cavity, said first means including means for connecting said first cavity to said pipe to define a flow path between said first cavity and said pipe;

second means for defining an annular chamber around said first cavity, said annular chamber being separated from said first cavity by a substantially cylindrical wall having at least one opening therein to define at least one flow path between said first cavity and said annular chamber;

third means mounted within said first means adjacent to said annular chamber and passing through said first cavity for defining a substantially cylindrical second cavity, the axis of said second cavity intersecting the axis of said first cavity at substantially right angles, said third means being exposed to said first cavity and providing at least one flow path between said first and second cavities, said third means additionally being exposed to said annular chamber and providing at least one flow path between said second cavity and said annular chamber, said third means additionally including means for connecting said second cavity to said user apparatus to define a flow path between said second cavity and said user apparatus;

fourth means mounted within said second cavity for at least partially closing said at least one flow path between said first and second cavities, said fourth means comprising a substantially cylindrical member having substantially the same radius as said second cavity; and

deformable annular means mounted on said substantially cylindrical wall and covering said at least one opening therein for permitting fluid flow in one direction only along said at least one flow path between said first cavity and said annular chamber.

4,214,608

APPARATUS FOR OPENING AND CLOSING A FLUID CONDUIT

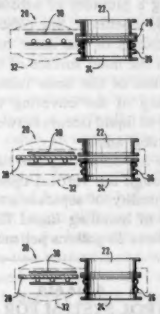
Pierre Mailliet, and Leon Ulveling, both of Howald, Luxembourg, assignors to Paul Wurth, S.A., Luxembourg

Filed May 31, 1978, Ser. No. 911,188

Claims priority, application Luxembourg, Jun. 6, 1977, 77488

Int. Cl.[3] F16K *3/02, 3/10*

U.S. Cl. 137—546 **12 Claims**



1. In apparatus for delivering crude blast furnace gas to a dust collector via a conduit, at least the portion of the conduit immediately upstream of the dust collector having its axis oriented generally vertically, the dust collector removing particulate matter from fluid flowing through the conduit and including an outer wall which defines an enclosure having a cross-sectional area greater than the diameter of the conduit, improved apparatus for controlling the flow through the conduit comprising:

valve means, said valve means including a movable valve member which in a first position establishes a hermetic seal across the conduit and thereby prevents gas flow through the conduit to the dust collector and which in a

second position opens the conduit for flow therethrough; and

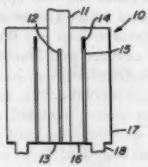
support means for said valve means, said support means including a frame extending upwardly from said dust collector outer wall, said frame being integral with and defining a prolongation of said dust collector outer wall, said frame being attached to said conduit upstream of said valve means whereby said valve means may support said conduit.

4,214,609

APPARATUS FOR DIVIDING GRAVITY FLOW LIQUID STREAM

Robert A. Wiesboeck, Stone Mountain, Ga., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 30, 1978, Ser. No. 955,857
Int. Cl.[2] A01C *23/02*
U.S. Cl. 137—573 **19 Claims**



12. An apparatus for dividing a gravity flow liquid ammonia stream at substantially atmospheric pressure into a plurality of separate streams of certain predetermined proportions comprising

(a) a substantially vertical inner liquid inlet tube with a closed end, said inner tube containing a plurality of substantially parallel vertically elongated openings beginning at such end of the tube, such openings being of such size so as to cause a partial backup of liquid traveling toward the end of the tube;

(b) a substantially vertical covering tube having a closed end and containing a plurality of substantially parallel vertically elongated openings, but offset from the vertically elongated openings of the inner tube, and wherein the space between the inner surface of the covering tube and the outer surface of the inner tube, and the size of the vertical opening of the covering tube are such that a partial backup of liquid occurs between the inner tube and the covering tube; and

(c) outlet means for collecting the liquid ammonia which passes out through the vertical openings of the covering tube into a plurality of separate streams, said apparatus being capable of handling liquid flow rates of between about 3 and about 20 gallons per minute.

4,214,610

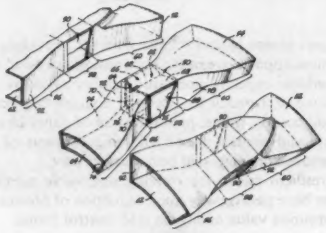
FLOW CONTROL SYSTEM FOR CONCENTRIC ANNULAR FLUID STREAMS

Varnell L. James, Kent, and George B. Evelyn, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 25, 1977, Ser. No. 854,636
Int. Cl.[2] F02K *3/06*
U.S. Cl. 137—597 **11 Claims**

1. A flow control system for receiving first and second fluid streams wherein each of said first and second fluid streams are annular in cross-sectional geometry and said first fluid stream concentrically surrounds said second fluid stream, said flow control system being operable to discharge said first and second fluid streams as annular fluid streams wherein said second fluid stream concentrically surrounds said first fluid stream and being operable to discharge said first and second fluid streams as a single annular fluid stream, said flow control system comprising:

an axially extending annular fluid duct including a first plurality of fluid passages having inlet openings of a geometry corresponding to annular sector for receiving and containing sectorial portions of said first annular fluid stream and including a second plurality of fluid passages having inlet openings of a geometry corresponding to an annular sector of said second annular fluid stream, said inlet openings of said first plurality of fluid passages being arranged in circumferential juxtaposition with one another to collectively define an annular entrance opening commensurate with said cross-sectional geometry of said first fluid stream, said inlet openings of said second plurality of flow passages being arranged in circumferential juxtaposition with one another to collectively define an annular opening commensurate with said cross-sectional geometry of said second fluid stream, each of said fluid passages of said first plurality of fluid passages having a substantially constant cross-sectional area at each point along the axial length of said annular fluid duct, each of said fluid passages of said second plurality of fluid passages having a substantially constant cross-sectional area at each point along the axial length of said annular fluid duct, said first and second plurality of fluid passages changing in cross-sectional geometry over a first predetermined axial region of said fluid duct from said geometry of said inlet openings to a geometry corresponding to an annular sector with said first plurality of fluid passages



being circumferentially interspersed with said second plurality of fluid passages to define a sectorially segmented annular flow pattern in which portions of said first fluid stream and portions of said second fluid stream occupy alternate segments of said sectorially segmented flow pattern, said plurality of first and second fluid passages being maintained in said circumferentially interspersed sectorial cross-sectional geometry over a second axially extending region of said annular fluid duct, said plurality of first and second fluid passages changing in cross-sectional geometry over a third predetermined axial region of said fluid duct from said circumferentially interspersed segmented cross-sectional geometry to discharge openings having a geometry corresponding to an annular segment, said discharge openings of said first plurality of fluid passages being arranged in circumferentially extending juxtaposition with one another to collectively define a first annular exit opening, said discharge openings of said second plurality of fluid passages being arranged in circumferentially extending juxtaposition with one another to collectively define a second annular discharge opening to coaxially surround said first annular discharge opening; and,

a plurality of valve means, each of said valve means associated with and mounted in a separate fluid passage of one of said first and second pluralities of fluid passages within said second axially extending region of said fluid duct, said plurality of valve means being operable to maintain fluid flow between said inlet and outlet openings of said associ-

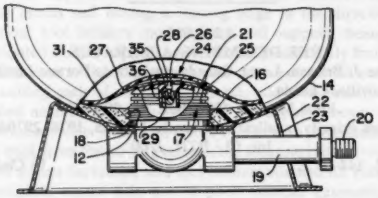
ated fluid passages to discharge said first fluid streams from said first said annular discharge opening and to discharge said second fluid streams from said second annular discharge opening, said plurality of valve means being further operable to redirect fluid flowing through said fluid passages associated with said valve means into adjacent ones of said circumferentially interspersed fluid passages to discharge said first and second fluid streams through one of said first and second discharge openings as a single fluid stream of annular cross-sectional geometry.

4,214,611

TIE-DOWN FOR ACCUMULATOR BAGS

Robert J. Takacs, Chardon; Winfield S. Brunkhurst, Shaker Heights, and Edward T. Le Breton, Mentor, all of Ohio, assignors to Structural Fibers, Inc., Chardon, Ohio

Filed Mar. 19, 1979, Ser. No. 21,588
Int. Cl.[2] F16L *55/00*
U.S. Cl. 138—30 **4 Claims**



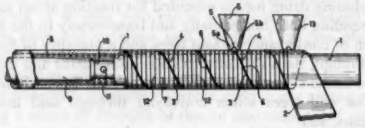
1. A pressurizing tank for a liquid dispensing system, comprising a pressure withstanding vessel, means defining a first opening in one end of the vessel, a cup-shaped strainer fitting removably mounted in said first opening and having a plurality of openings therethrough; said cup-shaped strainer fitting having an aperture therein means defining a second opening at the other end of the vessel, a flexible, inflatable, gas-tight bag within said vessel dimensioned to fit through said first opening when deflated and to cover the inner surface of said vessel when fully inflated, a bag inflating valve fixed to one end of the bag and extending through said second opening, and attaching means for fixing the other end of the bag to said strainer fitting, said attaching means comprising a disc-shaped pad having an aperture sealed at its periphery to the bottom of the bag, a pin having an enlarged head at one end and a prong at the other end, said pin extending through an aperture in said pad and having its head captured between said pad and the bottom of the bag, said prong extending through an aperture in said strainer fitting.

4,214,612

TUBE OF NON WOVEN MATERIAL FOR REVERSED OSMOSIS

Warren J. de Putter, Hardenberg, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Continuation-in-part of Ser. No. 410,298, Oct. 29, 1973, abandoned. This application Dec. 3, 1975, Ser. No. 637,289
Int. Cl.[2] F16L *9/16*
U.S. Cl. 138—144 **4 Claims**



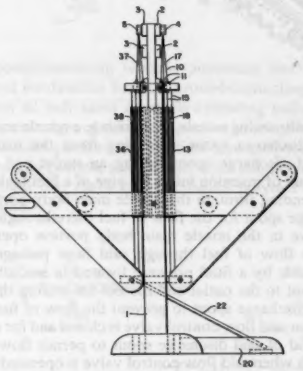
1. A tube of non-woven material, having fixed on the inner wall thereof a membrane for membrane filtration, said tube comprising a helically wound non-woven band of heat-sealable synthetic fibres with edges thereof positioned in overlapping relationship and providing overlapping portions in the inside of the tube, said overlapping portions being uniformally heated on their entire thickness and width by ultrasonic sealing vibrations, so as to completely heat-seal the overlapping parts and along their edges to avoid the formation of sharp and fibrous portions of extending fibrous ends within the inner side of the tube so that a smooth inner wall is obtained and to obtain a very uniform inner diameter whereby risk of damage of said membrane within the tube is minimized and the tube is provided with a membrane on its innerside.

4,214,613

LOOM

James S. Glessner, R.D. 2, Somerset, Pa. 15501

Filed Jan. 2, 1979, Ser. No. 27
Int. Cl.[3] D03D *29/00*
U.S. Cl. 139—33 **4 Claims**

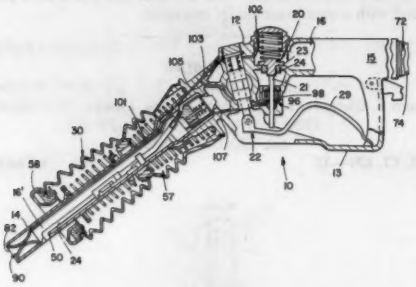


1. In a loom, an upright frame having a horizontal cross bar at its top, a lever extending lengthwise of one side of said cross bar, means pivotally connecting the central portion of the lever to the cross bar on a horizontal axis, a roller pivotally supported by one end of the lever on a horizontal axis and normally held by the lever in a predetermined central position between upper and lower positions, a lever cable hanging from the other end of said lever, a vertically movable floater suspended from the lever cable, an upper cable hanging from said roller, a pulley supported by each end of said upper cable, an intermediate cable hanging from each pulley, a set of four vertically movable parallel harnesses below the pulleys, each harness being suspended from a different end of said intermediate cables, treadles beneath the harnesses and floater, cables for connecting a treadle to two harnesses and said floater to lower those two harnesses and raise the other two, the cable connected to said floater being of a length to be pulled taut when said treadle is fully depressed to maintain said roller in said central position, other cables for connecting a treadle to the two harnesses suspended from one of said pulleys and to one of the other harnesses and said floater for lowering those three harnesses and said roller while raising the other harness, the last-mentioned cable connected to said floater being of a length to be pulled taut when the treadle connected to that cable is fully depressed to limit said lowering of said roller to a predetermined distance between its central and lower positions, and further cables for connecting a treadle to one harness and said floater for lowering that harness and the floater, whereby said other end of said lever is pulled down a predetermined distance as three harnesses are raised and the lever lifts said roller to a position between said central position and upper position.

4,214,614
VALVE MEANS FOR PREVENTING FUEL SPILLAGE FROM THE DISCHARGE SPOUT OF A FUEL DISPENSING NOZZLE

Walter R. Pyle, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 4, 1978, Ser. No. 965,980
Int. Cl.² B65B 3/26
U.S. Cl. 141—1 **6 Claims**

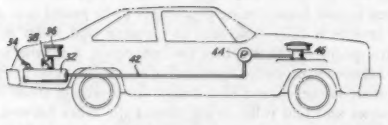


1. A fuel-dispensing nozzle, comprising: a nozzle main body portion, a discharge spout projecting from the main body portion, said discharge spout having an outlet end proportioned for ease of insertion into a fill pipe of a fuel tank, a flow passage extending through the nozzle main body portion and said discharge spout for the flow of fuel therethrough, a flow control valve in the nozzle main body portion operable to regulate the flow of fuel through said flow passage, valve means operable by a fluid pressure located in said discharge spout adjacent to the outlet end thereof for sealing the outlet end of said discharge spout to prevent the flow of fuel therethrough when said flow control valve is closed and for opening the outlet end of said discharge spout to permit flow of fuel therethrough when said flow control valve is operated to flow fuel through said flow passage, and means for supplying a fluid pressure to said valve means to close said valve means to prevent the flow of fuel out of said discharge spout when said flow control valve is closed and for removing the fluid pressure supplied to said valve means to open said valve means to permit the flow of fuel through the outlet end of said discharge spout when said flow control valve is operated to flow fuel through said flow passage.

4,214,615
DISPENSING APPARATUS FOR ADDING COLLOIDAL MAGNESIUM TO FUEL TANK

Winston Boyer, The Boyer Ranch, Savery, Wyo. 82332

Filed Feb. 27, 1978, Ser. No. 881,388
Int. Cl.² B65B 3/04
U.S. Cl. 141—363 **2 Claims**



1. A dispensing means for dosing a liquid fuel tank for an internal combustion engine with a unit dosage of colloidal magnesium dispersed in kerosene the unit dosage for gasoline fuel being about 1.7 grams magnesium per 500 cc of kerosene, for diesel fuel being about 2.0 grams of magnesium per 1000 cc of kerosene and for jet aircraft fuel being from 3 to 4 grams magnesium per 5000 cc of kerosene, said dispensing means comprising:

a generally circular container into which the unit dosage of colloidal magnesium dispersion in kerosene is poured and contained after it is opened by removing a separable cap fitting over said container top and out of which the unit dosage is metered at an outlet;

said container having a volume for holding at least one unit of 500 cc of kerosene for an automobile engine, at least one unit of 1000 cc of kerosene for a diesel engine and at least one unit of 5000 cc of kerosene for jet aircraft engine;

a separable cap fitting over the top of said container;

a metering valve located at the outlet at the bottom of said through which the unit dosage of colloidal magnesium in kerosene is metered via a delivery filler line into the fuel tank;

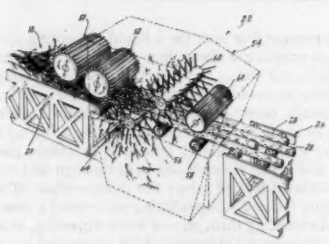
a curved delivery filler line for delivering said unit dosage of colloidal magnesium in kerosene from the outlet of said metering valve into the fuel tank ahead of the fuel pump or into the carburetor or air injector; and

a boss which tightly mounts the bottom outlet of the metering valve into the top of the fuel tank at a location remote from the curved delivery filler line to the fuel tank.

4,214,616
TREE DELIMBING APPARATUS

Maurice J. Brisson, Laval, Canada, assignor to Forano Limitee, Plessiville, Canada

Filed May 11, 1978, Ser. No. 904,807
Claims priority, application Canada, Feb. 16, 1978, 297048
Int. Cl.² B27L 1/00
U.S. Cl. 144—2 Z **16 Claims**



10. A tree delimbing apparatus comprising:

housing means having enclosing walls with openings therein defining an inlet for receiving a plurality trees to be delimbed, an outlet for discharging said trees delimbed and an opened base for evacuating limb debris;

means for conveying horizontally and longitudinally in a side-by-side arrangement said trees through said housing means said means for conveying including infeed means adjacent said inlet for advancing trees to said inlet, roller support means mounted inside said housing means below the feed line of said trees through said housing means for supporting and advancing said trees in said housing means, and pressure roller means mounted in said housing means and above said feed line of said trees through said housing and cooperating with said roller support means for advancing said trees through said housing means;

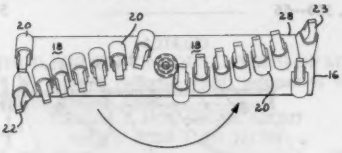
rotatable delimbing means, mounted in said housing means, including drum means mounted for rotation about an axis extending both horizontally and transversely to the direction of conveyance of said trees and a plurality of flexible delimbing flails attached to said drum means and extendible under centrifugal force to detach leaves and branches from said trees when conveyed through said housing means; and

a rotatable branch folding means located outside said housing means and extending over said infeed means for folding said branches prior to entry of said trees in said housing means.

4,214,617
STUMP CUTTER

Robert J. McKenry, Windber, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Jun. 19, 1978, Ser. No. 916,154
Int. Cl.[2] B27C 3/00; A01G 23/06
U.S. Cl. 144—2 N 9 Claims

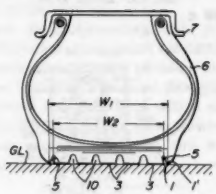


1. A stump cutter comprising: shank means rotatable about its longitudinal axis and adapted on one end to be driven in rotation; support means edge transversely attached to said shank means and having a leading edge in the direction or rotation; tool holders mounted on said support means and distributed on said support means radially outwardly from said shank means so that the cutting path of one cutter bit overlaps the cutting path of another cutter bit, said tool holders being located nearest the leading edge of the support means at the outermost radius from said shank means and progressing farther back from the leading edge as the locating radius from said shank means decreases, said tool holders adapted for receiving replaceable cutter bits; and a pilot member extending forwardly from one of said means for engagement with a stump, and means on said pilot member that urges the stump cutter into engagement with the stump when said shank is rotated.

4,214,618
HEAVY DUTY PNEUMATIC RADIAL TIRE

Hiroyoshi Takigawa; Hiroshi Ogawa; Shinichiro Ohkuni, all of Kodaira, and Mitsuhisa Yahagi, Sayama, all of Japan, assignors to Bridgestone Tire Company Limited, Kyobashi, Japan

Filed Apr. 14, 1978, Ser. No. 896,424
Claims priority, application Japan, Apr. 26, 1977, 52-48216
Int. Cl.[2] B60D 11/04
U.S. Cl. 152—209 D 6 Claims

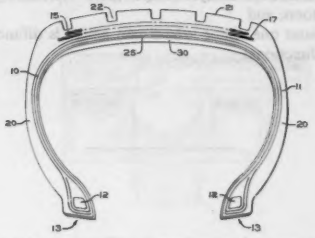


1. In a heavy duty pneumatic radial tire including a tread smoothly continuous at its round-shaped shoulders with sidewalls and formed in its substantially central circumferential surface with a plurality of main tread grooves extending circumferentially thereof, said tread being reinforced by a belt consisting of at least two metal cord layers arranged about carcass plies and between said tread and carcass plies, the improvement comprising, in an end zone of contact surfaces of said shoulders with a road surface under a standard load, a circumferentially extending narrow groove in a zigzag pattern having a width of 15–30% of that of said main tread grooves, an amplitude of said zigzag pattern of 0.5–2.0% of a tread width corresponding to a distance between ends of said contact surfaces and a pitch of said zigzag pattern of 2.0–7.0% of said tread width.

4,214,619
PUNCTURE-SEALING TIRE

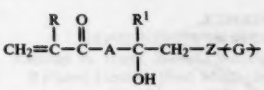
Harold H. Bowerman, Jr., Fairview Park, and Robert W. Ireland, Avon Lake, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

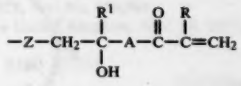
Filed Apr. 28, 1977, Ser. No. 791,759
Int. Cl.[2] B60C 5/14, 17/00; C08F 8/32
U.S. Cl. 152—347 13 Claims



1. A puncture-sealing tubeless pneumatic tire comprising two spaced inextensible beads, a ground-contacting tread portion, a pair of individual sidewalls extending radially inward from the axial edges of said tread portion to join the respective beads, a carcass portion, and a sealant layer disposed inwardly of said carcass portion, said sealant layer comprising:

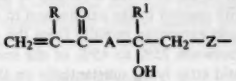
(1) at least one vinylidene-terminated polymer having the formula





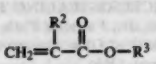
herein Z is selected from the group consisting of —S—,

and —O—, A is a bivalent radial containing 1 to 10 atoms wherein at least one of said atom is selected from the group consisting of C, O, S and N, R and R^1 are hydrogen or alkyl radicals containing 1 to 4 carbon atoms, and G is a polymeric backbone comprising carbon-carbon linkages, said vinylidene-terminated polymer containing an average of from about 1.5 to about 4



groups per molecule,

wherein said backbone comprising carbon-carbon linkages contains polymerized units of at least one vinylidene monomer having at least one terminal $CH_2=C<$ group, said monomer being selected from the group consisting of (a) monoolefins containing 2 to 14 carbon atoms, (b) dienes containing 4 to 10 carbon atoms, (c) vinyl and allyl esters of craboxylic acids containing 2 to 8 carbon atoms, (d) vinyl and allyl ethers of alkyl radicals containing 1 to 8 carbon atoms, (e) acrylic acids and acrylates having the formula



said R^2 being hydrogen or an alkyl radical containing 1 to 3 carbon atoms and said R^3 being hydrogen, an alkyl or hydroxy alkyl radical containing 1 to 18 carbon atoms, or an alkoxyalkyl, alkylthioalkyl or cyanoalkyl radical containing 2 to 12 carbon atoms; and

(2) at least one amine where said amine is difunctional or polyfunctional.

4,214,620

RADIAL TIRES HAVING A SIDEWALL STIFFENING CIRCUMFERENTIAL STRUCTURE

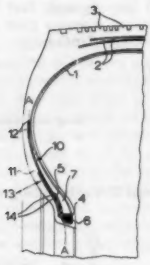
Mario Mezzanotte, Milan, Italy, assignor to Industrie Pirelli, S.p.A., Milan, Italy

Continuation of Ser. No. 476,865, Jun. 6, 1974, abandoned. This application Dec. 21, 1977, Ser. No. 862,973

Claims priority, application Italy, Jun. 12, 1973, 25181 A/73

Int. Cl.² B60C *9/08, 15/00*

U.S. Cl. 152—354 R **4 Claims**



1. In a pneumatic radial type tire for vehicle wheels having tire beads containing bead cores and comprising

only one carcass ply, said carcass ply extending from one bead to the other bead and turning up about the said cores contained in the beads from the inner side to the outer side, each bead comprising a filling of hard rubber positioned on the core,

the bead zone and the lower zone of the sidewall comprising a first strip of metal cords arranged in an axially outer position with respect to the carcass and to the turn-ups of the latter and extending radially from the core zone to a height of between 25% to 45% of the section height of said tire, said strip lying substantially on the trace of the flexional neutral axis in the lower zone of the sidewall, said metal cords being inclined at an average angle of from 5° to 15° with respect to the circumferential line of said tire,

a second strip of cords of a tension and compression resistant metal, situated in an axially outer position with respect to said first strip radially extending from the core zone, the height of said second strip being smaller than the radial height of said first strip, the cords of said second strip being inclined at an angle of substantially 90° with respect to the circumferential lines of said tire.

4,214,621

AWNING MECHANISM

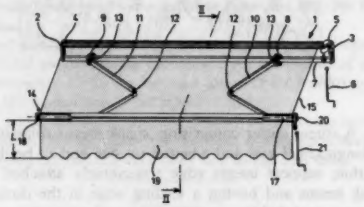
Bernhard Wessels, Rheine, and Adolf Fugger, Greven, both of Fed. Rep. of Germany, assignors to Schmitz-Werke GmbH & Co., Emsdetten, Fed. Rep. of Germany

Filed Sep. 12, 1978, Ser. No. 941,846

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1977, 2746848

Int. Cl.² E04F *10/06*

U.S. Cl. 160—66 **5 Claims**



1. An awning mechanism, comprising frame means for attachment to a vertical surface and including:

a primary awning roller on which an awning cloth may be wound;

first drive means for imparting rotary motion to said primary roller;

extension means for supporting a drop tube at varying distances from said primary awning roller, said drop tube serving to support and hold a part of said awning cloth and further serving to hold a freely depending part of awning cloth defining a flyer of variable length; and

further comprising means within said drop tube for permitting said drop tube to hold said awning cloth at varying parts thereof, and wherein said awning cloth and said flyer are constituted by a single integral piece of material.

4,214,622

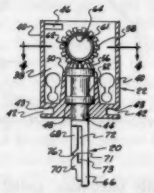
VERTICAL BLIND

Victor Debs, Staten Island, N.Y., assignor to Levolor Lorentzen, Inc., Hoboken, N.J.

Filed Jun. 30, 1978, Ser. No. 921,048

Int. Cl.² E06B *9/30*

U.S. Cl. 160—168 A **34 Claims**



1. A vertical blind, comprising: a blind head, a plurality of carriers supported for reciprocating movement in said head, a plurality of holder means respectively supported in said carriers for pivotal movement and respectively adapted to support a plurality of vanes therefrom, and control means for controlling said reciprocating movement of said carriers and for controlling said pivotal movement of said holder means, said control means including rod means rotatably supported in said head, said rod means extending in a substantially vertical plane substantially bisecting said carriers, means for rotating said rod means, a plurality of first bevel gear means respectively rotatably supported in said carriers and mounted for rotation with said rod means in said plane, a plurality of second bevel gear means respectively connected to said holder means and respec-

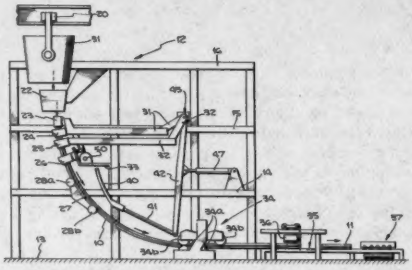
tively mounted for meshing engagement with said first bevel gear means and having substantially vertical axes of rotation located in said plane, whereby rotation of said rod means by said rotating means will rotate said holder means, each of said carriers comprising seat means for supporting the respective holder means, and also comprising bearing means for rotatably supporting the respective first bevel gear means in a position such that said first bevel gear means holds the respective holding means on said seat means.

4,214,623

METHOD FOR CONTINUOUS CASTING OF METAL

Howard W. Jaenson, Fullerton, Calif., assignor to Witteman Steel Mills, Fontana, Calif.

Filed Jul. 5, 1978, Ser. No. 922,037
Int. Cl.² B22D *11/00, 11/124*
U.S. Cl. 164—83 **10 Claims**



1. In the art of continuous casting of metals, the method comprising the steps of:

continuously pouring metal into a vertically reciprocating mold so as to form a continuous metal casting which then moves downward underneath the mold;

placing two expansible metal shoes about the casting at two corresponding points along its length;

continuously supplying liquid coolant in heat-conductive relationship to said shoes so as to cool the casting;

each time the reciprocating mold moves upward, squeezing one of the shoes against the casting and then holding it in place so that it will act as a brake to inhibit longitudinal movement of the casting;

each time that the reciprocating mold moves downward, squeezing the other shoe against the casting so as to firmly grasp it, while concurrently releasing most but not all of the pressure with which said one shoe grips the casting, so that the casting may then slide within said one shoe; and

thereafter driving said other shoe downward in at least approximate synchronism with the movement of the mold, so as to drive the casting downward.

4,214,624

METHOD OF AND MOLD FOR DC CASTING

John J. Foye, Livermore, Calif., and Jerry F. Harris, Slidell, La., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

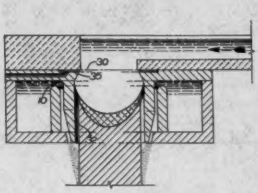
Filed Oct. 26, 1978, Ser. No. 954,964
Int. Cl.² B22D *11/04, 11/124*
U.S. Cl. 164—89 **9 Claims**

9. A method of DC casting light metal in an open ended, tubular shaped mold provided with a passageway between a feed end and a discharge end thereof, said passageway having a first chill section with an inner surface which diverges in the direction of the discharge end of the mold, followed by a second straight walled chill section concentrically disposed with respect to the first chill section, the diverging inner surface of the first chill section intersecting with the inner surface of the second chill section at an angle greater than 135°, said method comprising:

(a) continuously introducing lubricant around the inner periphery of said passageway at the feed end thereof;

(b) introducing molten metal into the first chill section;

(c) controlling the passage of molten metal stream through the first chill section so that a thin, expandable embryo of solidified metal forms adjacent to the diverging surface of the first chill section and the metal stream expands it passes through the first chill section and into the second



straight walled chill section wherein the metal is solidified or partially solidified into the desired cross section, said passage avoiding the buildup or maintenance of a body of lubricant at the intersection of said first and second chill sections by the contacting of the intersection with the solidified metal embryo;

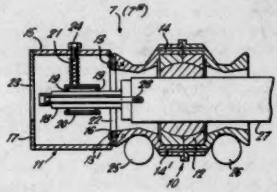
(d) withdrawing the solidified or partially solidified metal from the discharge end of the molt and applying coolant onto the surfaces of said stream to effect complete solidification thereof.

4,214,625

CONTINUOUS CASTING OF METALS

Anthony W. Hudd, Sutton Coldfield, England, assignor to IMI Refiners Limited, West Midlands, England

Filed Nov. 1, 1978, Ser. No. 956,989
Claims priority, application United Kingdom, Nov. 16, 1977, 47664/77
Int. Cl.² B22D *11/128*
U.S. Cl. 164—420 **15 Claims**



1. A roll device for use in the continuous casting of metal comprising

a roll having a rotational axis, and provided with a pair of strand accommodating spaced annular grooves formed in or on a continuous external circumferential surface thereof;

a shaft having a rotational axis;

means for mounting said roll on said shaft so that the rotational axis of said roll is tiltable relative to the rotational axis of said shaft in any plane containing the shaft rotational axis;

resilient means associated with said roll for normally maintaining said axes coaxial with one another and allowing tilting of said roll axis with respect to said shaft axis in any particular plane containing said shaft axis only upon the application of a force of at least a predetermined magnitude so that tilting will occur as a result of strands of differing diameters being received by said roll annular

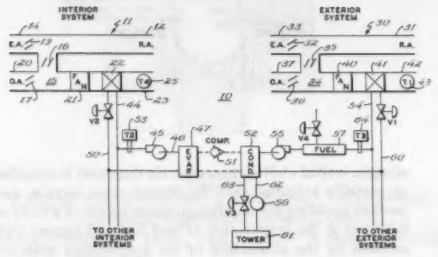
grooves, but will not occur as a result of differential throughput rates of the strands received by said roll annular grooves.

4,214,626

REJECTED HEAT AIR CONDITIONING CONTROL SYSTEM

Donald H. Spethmann, Arlington Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 5, 1978, Ser. No. 939,513
Int. Cl.² F25B *29/00*
U.S. Cl. 165—29 **44 Claims**



1. A control for the air conditioning system of a building, said air conditioning system having both interior systems for the delivery of conditioned air to interior zones within said building and exterior systems for the delivery of conditioned air to exterior zones of said building, said air conditioning system including an evaporator for supplying chilled water to at least said interior systems, a condensor for supplying hot water to at least said exterior systems, and a compressor connected between said evaporator and said condensor, a cooling tower connected to said condensor, at least one outdoor air damper associated with said interior and exterior systems, and a source of fuel heat for heating said hot water supplied to said exterior systems by said condensor, said control system comprising:

first temperature sensing means for supplying a first output signal dependent upon the temperature of the air within at least one interior system;

first control means, connected to said first temperature sensing means and responsive to said first output signal, adapted to control the temperature of said chilled water in accordance with the temperature sensed by said first temperature sensing means in said at least one interior system, said first control means including an override means;

second temperature sensing means for sensing the temperature of air within at least one exterior system;

second control means connected to said second temperature sensing means for producing a second output signal;

third control means responsive to a first level of said second output signal for fully rejecting heat from said condensor through said cooling tower and to a second level of said second output signal for rejecting minimum heat through said cooling tower;

fourth control means responsive to said second output signal between a third level and a fourth level for providing a signal connected to said override means to override said first output signal to control the temperature of said chilled water to modulate rejected heat from said condensor; and

fifth control means responsive to said fourth level of said second output signal for supplying minimum fuel heat to said hot water and to a fifth level of said output signal for supplying maximum fuel heat to said hot water,

wherein said third level falls between said fourth level and said second level.

4,214,627

FIRE TUBE FOR A HEATING BOILER

Wolfgang Kunkel, Triesen, Liechtenstein, assignor to Interliz Anstalt, Vaduz, Liechtenstein

Filed Nov. 7, 1978, Ser. No. 958,854
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1977, 7734356[U]
Int. Cl.² F28F *1/40*
U.S. Cl. 165—179 **7 Claims**

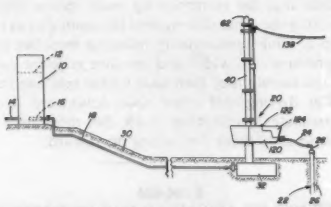
1. A fire tube for a heating boiler comprising two metal tube halves, each tube half having a base portion and two leg portions projecting at an angle from said base portion, said tube halves being disposed relative to one another such that the terminating ends of said leg portions abut one another, first welding means joining said abutting ends, a plurality of substantially U-shaped elements extending longitudinally within the fire tube, each of said U-shaped elements having a base section and projecting leg sections, and second welding means joining said base sections to said base portion of one of said tube halves, said leg sections of said U-shaped elements being parallel to one another and extending substantially across the width of said fire tube.

4,214,628

MULTIPLE-PURPOSE UNDERGROUND FLUID INJECTION SYSTEM

Elton M. Botts, 2901 Western Ave., Mattoon, Ill. 61938

Filed Jul. 11, 1978, Ser. No. 923,669
Int. Cl.² E21B *33/00*
U.S. Cl. 166—75 R **7 Claims**



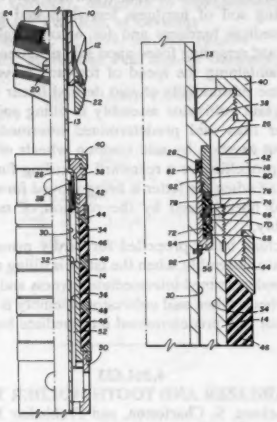
1. A multiple-purpose underground fluid injection system for discharging fluid into a desired underground strata through a well communicated with only the desired underground strata, said system including a well injector communicated with a supply of injection fluid and a well, said well injector including a vessel in low-pressure, high-volume communication with a supply of injection fluid, said vessel including a standpipe connected to the top of said vessel and extending upwardly therefrom and in communication therewith and receiving injection fluid from the vessel, and pump means mounted between the standpipe and the well and communicating directly with the standpipe and the well for controlling flow of injection fluid into the well.

4,214,629

WELL PACKER BYPASS VALVE SEAL ASSEMBLY

Thomas E. Upton, Garland, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 895,423, Apr. 12, 1978, Pat. No. 4,188,998. This application Apr. 19, 1979, Ser. No. 31,566
Int. Cl.[2] E21B *33/12*; B65D *53/02*
U.S. Cl. 166—129 8 Claims



8. A seal assembly for a valve in a well packer, comprising:
a tubular seal carrier assembly mountable with a packer mandrel in an interior portion of a packer valve housing, said seal carrier assembly having a pair of annular seal elements mounted in a longitudinally spaced relation around the outer periphery thereof;
a pair of grooves formed around the outer periphery of said seal carrier with said seal elements mounted therein, said grooves are each formed by a recess formed transversely around the exterior of each end portion of said tubular seal carrier;
a back-up ring is mounted in opposed sides of each said recess;
said seal elements are each cross-sectionally generally T-shaped with a longitudinally shorter portion thereof extending outward to sealingly engage a valve seat, and the other longitudinally longer portion thereof is located in a radially inner portion of said groove and said seal elements each being positioned between the associated seal retainer ring and said spacer ring; and
an inner annular seal between the inner perimeter of said seal carrier assembly and said mandrel for sealing between said seal carrier and said packer mandrel.

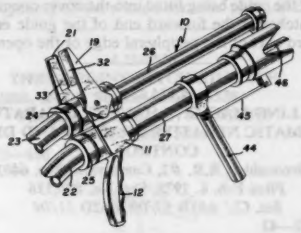
4,214,630

FIRE FIGHTING NOZZLE

John P. Gagliardo, Shrewsbury, Mass., assignor to Feecon Corporation, Westboro, Mass.

Filed Dec. 4, 1978, Ser. No. 966,113
Int. Cl.[2] A62C *35/00*
U.S. Cl. 169—18 6 Claims

1. Fire fighting nozzle, comprising:
(a) a main body having an upper and a lower passage extending therethrough in spaced-parallel relationship,
(b) a ball located in each passage, each ball having a bore, the ball being mounted for rotation about a horizontal axis passing through the center of the ball perpendicular to the central axis of the bore,
(c) means including two upwardly-extending levers pivotally mounted at the upper portion of the main body for rotating each of the balls from an operative position where the bore is aligned with its passage to an inoperative position where the bore is at a right angle to the passage,
(d) means for connecting one end of each passage to one of two different pressurized agents,
(e) a tube extending from the other end of each passage, and



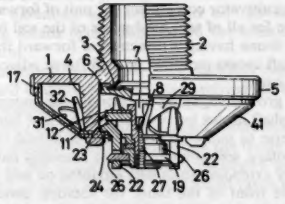
(f) a pistol grip handle extending from the lower portion of the main body, the two levers being mounted side-by-side and pivoted on a common pivotal axis extending horizontally at a right angle to the longitudinal axes of the passages, one lever being connected by a gear train to the lower ball, which gear train consists of a plurality of gears mounted on spaced, parallel axes.

4,214,631

SPRINKLER HEAD WITH HEAT SENSITIVE COVER RELEASE AND VALVE RELEASE MECHANISM

Tadashi Hattori, 15-20, 1-chome, Kamori-cho, Kishiwada-shi, Osaka-fu, Japan

Filed Dec. 1, 1978, Ser. No. 965,504
Claims priority, application Japan, Aug. 8, 1978, 53-111005[U]; Aug. 8, 1978, 53-111006[U]
Int. Cl.[2] A62C *37/12*
U.S. Cl. 169—57 1 Claim



1. A sprinkler head, comprising in combination:
(a) an externally threaded straight tube (2) with a fluid supply forward end for supplying fluid in the forward direction therefrom;
(b) a disc-like body (1) with a lower part connected to said supply end;
(c) a central portion in said body (1) with a water discharge valve seat (3) defined in said central portion;
(d) a plurality of supporting legs (4) formed in said lower part and extending in the forward direction from said body (1) outside of said valve seat and having a receiver on the inside of the forward end of each said leg;
(e) a valve (6) in contact with said valve seat;
(f) heat fusible means engaging said valve through a guide sleeve to hold the valve in contact with said valve seat and being connected to said legs through lever means, said lever means engaging the receiver of each said leg;
(g) a thin deflector (29) with a multiplicity of small sprinkling apertures mounted on said lower part, extending radially outward of said legs in the direction of the periphery of said disc-like body (1) over said body;

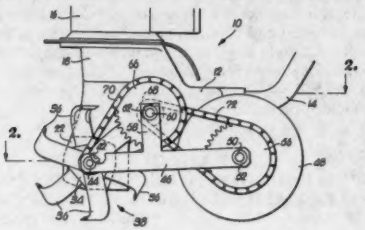
(h) elongated projections (32) inside said deflector extending rearwards in the direction of said tube;
(i) a guide (13) mounted on said lever means through a spring guide and being held in place by said heat fusible means, said guide having catches at the forward end; and,
(j) a cover having a tapering shape to fit the outside of the deflector and having an opening in the center, the forward end of the guide being fitted into the cover opening so that the catches at the forward end of the guide engage the forward part of the peripheral edge of the opening.

4,214,632

SOIL TILLING MACHINE HAVING APPARATUS FOR AUTOMATIC NEGATIVE BRAKING AND DRIVE CONTROL

Ernest L. Brookshier, R.R. #2, Centerview, Mo. 64019

Filed Feb. 8, 1978, Ser. No. 876,116
Int. Cl.[3] A01B *33/00*; B62D *51/04*
U.S. Cl. 172—42 3 Claims



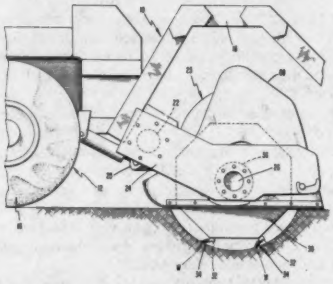
1. In a self-propelled, hand maneuvered, rotating cultivator type machine for tilling soil of either a predetermined intermediate hardness, a hardness significantly less than said predetermined hardness or a hardness significantly greater than said predetermined hardness, with substantial uniformity of forward speed of the machine, tilling depth, and number of rotations of the cultivator component per unit of forward travel of the machine for all of said hardnesses of the soil being tilled:
a mobile frame having a direction of forward travel;
wheel shaft means mounted on said frame adjacent the rear of the latter;
a pair of ground engaging traction wheels mounted on said wheel shaft means for rotation about a first horizontal axis transverse to said direction of travel of said frame;
a tined, rotary, soil tilling cultivator assembly having a horizontally extending shaft part mounted on said frame adjacent the front of the latter for rotation about a second horizontal axis transverse to said direction of travel of said frame, in spaced parallelism with said first axis and disposed forwardly of the latter;
a motor assembly mounted on said frame above said cultivator assembly and having a downwardly extending, substantially vertical power output shaft;
first coupling means including a worm mounted on said output shaft and a cooperating gear mounted on said shaft part of said cultivator assembly, said worm being meshed with said gear for rotating said cultivator assembly at a predetermined rotational speed and constituting means for producing a force of magnitude for moving said machine forwardly at a predetermined and desired linear speed when said cultivator assembly is tilling soil of said predetermined intermediate hardness but of magnitude that would tend to move said machine forwardly at undesirably greater or lesser linear speeds when said cultivator assembly is tilling soils of hardness respectively greater or less than said predetermined intermediate hardness;
second coupling means including first sprocket means mounted on said shaft part of said cultivator assembly, second sprocket means connected with said drive wheels, and connecting means including chain means positively coupling said first sprocket means with said second sprocket means for driving said traction wheels at a predetermined rotational speed coordinated with the rotational speed of said cultivator assembly and said desired linear speed of said machine and constituting means for automatically exerting an extra forward propelling force upon said machine of magnitude for maintaining the speed of forward movement of said machine substantially at said desired linear speed thereof when said cultivator assembly is tilling soil of hardness less than said predetermined intermediate hardness and for automatically exerting a rearward retarding force upon said machine of magnitude for maintaining the speed of forward movement of said machine substantially at said desired linear speed thereof when said cultivator assembly is tilling soil of hardness greater than said predetermined intermediate hardness without exertion by said traction wheels of either a forward propelling or a rearward retarding force upon said machine when the latter is being moved forwardly at said desired linear speed by the rotation of said cultivator assembly,
said machine being propelled forwardly primarily by said cultivator assembly when the latter is tilling soil of at least said predetermined intermediate harness and by said traction wheels when said cultivator assembly is tilling soil of less than said predetermined intermediate hardness.

4,214,633

SOIL STABILIZER AND TOOTH HOLDER THEREFOR

Gary L. Jackson, S. Charleston, and Prabhakar B. Rao, Fairborn, both of Ohio, assignors to Koehring Company, Brookfield, Wis.

Filed Oct. 11, 1977, Ser. No. 841,015
Int. Cl.[3] A01B *33/02*, *33/14*
U.S. Cl. 172—123 1 Claim



1. In a soil stabilizer of the type including a self-propelled vehicle, a rotor having a plurality of teeth and being rotatable about a horizontal axis, and drive means for rotating the rotor to pulverize soil, the improvement wherein:
said drive means includes means for rotating said rotor in opposite directions, and
said rotor includes a plurality of tooth holders, each holder having generally oppositely directed coplanar tooth-receiving sockets for selectively receiving a tooth projecting toward the direction of rotation,
said sockets and teeth being complementarily tapered to provide a friction fit therebetween, said sockets intersecting one another so that a friction-generating tapered engagement between the socket and the tooth occurs at front and rear ends of the tooth and is interrupted therebetween by the zones of intersection of said sockets so that manufacturing variations in taper of the tooth tend to be compensated for,
said sockets being rearwardly open to permit engagement of the tooth with a removal tool; and

said holder comprising two half sections that are divided along a vertical plane extending end-to-end through said sockets, said sections being connected by weld joints.

4,214,634

ARRANGEMENT FOR COUPLING A CULTIVATING ATTACHMENT TO A CULTIVATING MACHINE

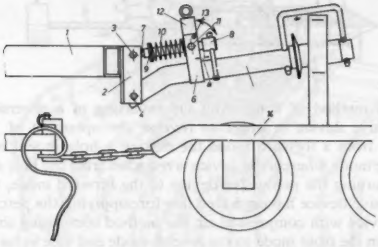
Willy Rau, Weilheim, and Christian Taus, Kirchheim, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Rau GmbH, Weilheim, Fed. Rep. of Germany

Filed Sep. 13, 1978, Ser. No. 942,894

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1977, 7728517[U]

Int. Cl.[2] A01B *23/04*

U.S. Cl. 172—179 **15 Claims**



1. In a tractor-drawn cultivating machine having a main frame adapted to be fitted with leading cultivating implements and at least one roller unit trailing the main frame and the cultivating implements, in combination at least one spring suspension support means articulately coupling a respective roller unit to the main frame of the cultivating machine, including means for adjusting the relative elevations of the main frame and the roller unit of the cultivating machine while permitting limited relative vertical movement between the same, and spring means opposing such relative movement with shock-absorbing action; and means cooperating with said spring-suspension support means and movable between a blocking setting preventing said limited relative movement and an unblocking setting not preventing such limited relative movement.

4,214,635

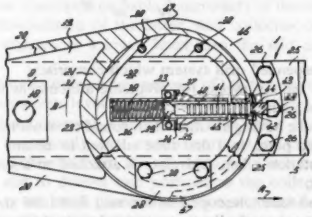
IMPLEMENT

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed May 12, 1978, Ser. No. 905,438

Int. Cl.[2] A01B *61/04*

U.S. Cl. 172—271 **16 Claims**



1. An implement comprising a frame and a working member rigidly connected to said frame during normal operation through coupling means, said coupling means comprising a first coupling member on said frame and a second coupling member on said working member, said first member being located coaxially within the second member and the two members being circular in cross-section with a common centerline, a shear pin within said first member and said pin extending outwardly into openings in the perimeters of said two members to prevent relative pivoting until overload, said pin being shearable upon overload and said second member being pivotable about said centerline, the opening of said second member being uncovered upon pivoting to allow a fractured end portion in the opening of the second member to be discharged.

4,214,636

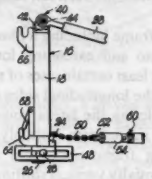
THREE-POINT HITCH ADAPTER

Rex R. Griffith, Rte. 2, Seneca, Kans. 66538

Filed Jul. 7, 1978, Ser. No. 922,525

Int. Cl.[2] A01B *59/043*

U.S. Cl. 172—450 **3 Claims**



1. An adapter for supporting an implement on a tractor having a drawbar and a three point hitch wherein the hitch includes a pair of lower, horizontally spaced drag links powered for up and down swinging movement and an upper freely swingable stabilizer link, said adapter including:

a generally horizontal crossbar for pivotally interconnecting the drag links;

a frame supported on the crossbar and extending upwardly therefrom, said frame including a continuous, polygonal loop having a pair of horizontally spaced, upright side arms, an upper horizontal crossbeam joining the arms and a lower horizontal crossbeam joining the arms and a lower horizontal crossbeam joining the arms;

means for mounting said implement on the frame, said mounting means being disposed on the arms and upper crossbeams;

a first pivot means for coupling the stabilizer link with the frame, said first pivot means being midway the ends of the upper crossbeam; and

a second pivot means; being crossbeam, interconnecting the crossbar and the frame for rendering the frame swingable relative to the crossbar about an essentially upright axis extending through said first and second pivot means.

4,214,637

ELEVATION ALTERING STRUCTURE FOR AGRICULTURAL IMPLEMENTS

Roy E. Applequist, Salina, Kans., assignor to Great Plains Manufacturing Incorporated, Salina, Kans.

Division of Ser. No. 836,719, Sep. 26, 1977, Pat. No. 4,171,022. This application Oct. 10, 1978, Ser. No. 949,999

Int. Cl.[3] A01B *63/26, 73/00*

U.S. Cl. 172—484 **7 Claims**

1. In an implement carrier of the type including means for selectively altering the elevation of ground conditioning tools carried thereby:

a transversely extending, essentially horizontal, implement supporting frame adapted to be drawn by a draft vehicle and to be maintained at an essentially fixed elevation relative to the ground;

a transversely extending, implement carrying frame adapted to have a plurality of ground conditioning tools secured thereto,

said implement carrying frame including essentially horizontal, transversely extending structure generally disposed

beneath said supporting frame and a plurality of vertically projecting mounting members attached to said horizontal structure,

said horizontal structure associated with said implement carrying frame comprising a first transversely extending frame member adapted to have a plurality of said tools attached thereto, and a second transversely extending frame member longitudinally spaced behind said first frame member, essentially parallel to the latter, and adapted to have a plurality of said tools attached thereto,

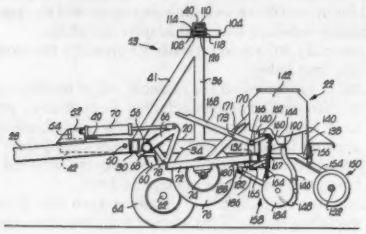
said first and second frame members being joined together by longitudinally extending support elements whereby to form a rigid unit extending in a plane essentially parallel with the ground thereunder,

said mounting members secured to corresponding one of said support elements between said first and second frame members,

said supporting frame including a plurality of guide elements secured thereto and extending longitudinally therefrom proximal to at least certain ones of said mounting members for engaging the longitudinal sides of said mounting members and restricting the lateral movement of the latter;

parallel linkage mechanism shiftably mounting said implement carrying frame upon said implement supporting frame for essentially vertical shifting of the former relative to the latter,

said linkage mechanism including a first and second parallel link element, there being further provided means for respectively pivotally connecting the opposite extremities of each said link elements to said supporting frame and to one of said mounting members,



said linkage mechanism being operable to maintain said unit essentially parallel with said ground whereby to maintain the tools associated with each of said frame members at essentially the same elevation with respect to the ground, when said lever means is in any one of said plurality of positions thereof;

manually operably lever means connected with said linkage mechanism for selectively operating the latter to shift said carrying frame to alter the elevational relationship of said tools to the ground;

a transversely extending shaft member mounted for rotation on said implement supporting frame,

one extremity of one of said links being secured to said shaft for rotation along with the latter,

said lever means having one extremity thereof also connected with said shaft,

said lever means functioning upon manual operation thereof to rotate said shaft and manuipulate said linkage mechanism whereby to provide said vertical shifting of said implement carrying frame; and

releasable retaining means connected with said lever means and said implement supporting frame, for releasably retaining said lever means in one of a plurality of positions corresponding to one of a plurality of elevational relationships of said tools to the ground.

4,214,638

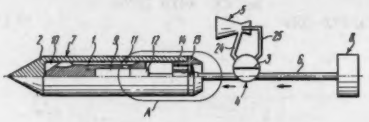
METHOD OF CONTROLLING THE REVERSING OF A DEVICE FOR DRIVING HOLES IN EARTH AND DEVICE FOR PERFORMING SAME

Boris V. Sudnishnikov, Krasny prospekt, 56, kv. 59; Khaim B. Tkach, ulitsa Gogolya, 17, kv. 49; Alexandr D. Kostylev, ulitsa Derzhavina, 19, kv.44; Veniamin V. Kamensky, ulitsa Derzhavina, 19, kv. 70; Konstantin K. Tupitsyn, Krasny prospekt, 51, korpus 3, kv. 25, and Vladimir M. Terin, Gusinobrodskoe shosse, 19, kv. 10, all of Novosibirsk, U.S.S.R.

Filed Feb. 16, 1978, Ser. No. 878,414

Int. Cl.[2] B25D *9/00*

U.S. Cl. 173—1 **3 Claims**



1. A method of controlling the reversing of a reversible percussive device in order to reverse the operation of the device from a forward mode for making a hole in soil to a reverse mode wherein the device is retracted from the hole and for returning the percussive device to the forward mode, the percussive device having a feed line for supplying the percussive device with compressed air, the method comprising shifting from the front mode to the reverse mode and vice versa by discontinuing supply of compressed air through the feed line, developing a suction in the device to effectively discontinue the mode in which the device is operating and establishing the other mode, and resupplying compressed air to the device through said feed line to drive the device in the selected other mode.

4,214,639

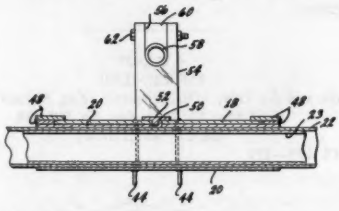
SUSPENDED DRILLING SYSTEM

Stanley J. Anderson, 10303 Channel Rd., Lakeside, Calif. 92040

Filed Apr. 4, 1979, Ser. No. 27,050

Int. Cl.[2] E21C *5/00, 9/00, 11/00*

U.S. Cl. 173—43 **6 Claims**



1. A suspended drill system which comprises:

a plate having means for pivotable attachment to a crane boom point;

a first tube having an other-than-round cross-section secured to said plate, said first tube adapted to assume a vertical orientation when said plate is attached to a crane boom point;

a second tube telescoped within said first tube and adapted to extend vertically above and below said first tube when said plate is attached to a crane boom point;

a frame attached to the lower end of said second tube;

means for connecting said frame to a hoisting cable of said crane whereby said cable supports said frame;

a drill stem extending downwardly of said frame for rotation relative thereto; and

engine means within said frame for rotating said drill stem;

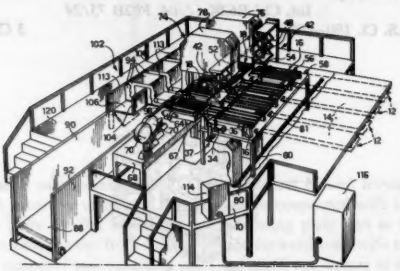
whereby a hole may be drilled anywhere within reach of said boom point.

4,214,640

MACHINE FOR THE AUTOMATIC MANUFACTURE OF MIXTURES OF DIFFERENT KINDS OF CAOUTCHOUC INTENDED TO FORM PART OF A FILLER MIXTURE

Gaetano Di Rosa, Pino Torinese, Italy, assignor to F.A.T.A.-Fabbrica Apparecchi di Sollevamento e Trasporto ed Affini S.p.A., Turin, Italy

Filed Apr. 3, 1979, Ser. No. 26,707
Claims priority, application Italy, Aug. 16, 1978, 68911 A/78
Int. Cl.[2] G01G *19/22, 19/04;* B26D *7/00*
U.S. Cl. 177—70 10 Claims



1. Machine for the automatic preparation of fillers of different kinds of caoutchouc intended to form part of a filler mixture, wherein the machine comprises:

a number of conveyor lines arranged side-by-side and equal in number to the number of kinds of caoutchouc, each conveyor line comprising in series a feed conveyor for caoutchouc blocks, a measuring conveyor and a weighing conveyor;

a cutting unit comprising at least one band saw having a rest position in which the cutting branch of the saw is outside the path of the caoutchouc blocks on the said conveyor lines,

means for moving the cutting unit to complete a working stroke in which said saw cuts off portions of the blocks projecting from the measuring conveyors towards the weighing conveyors, whilst said conveyors are stationary, followed by a return stroke to said rest position;

weighing means associated with the weighing conveyor of each conveyor line;

control means for controlling the operation of the weighing means and the measuring and weighing conveyors in successive measuring cycles;

a collector conveyor, movable transversely of the conveyor lines downstream of the latter, said collector conveyor being situated at a lower level than the said conveyor lines;

a storage unit disposed downstream of the conveyor lines at an intermediate level between said conveyor lines and said collector conveyor, said storage unit being adapted to store temporarily any excess portions of caoutchouc blocks delivered from the conveyor lines in a measuring cycle and to deliver said portions to the collector conveyor in the initial phase of a successive measuring cycle,

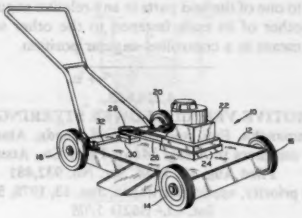
a processor including data storage means for memorising the weight of the fillers of the different kinds of caoutchouc intended to form part of the mixture, said processor being operatively associated with the control means for controlling the conveyors of each conveyor line, the cutting unit and the storage unit in dependence upon the stored data and data sent to it by the weighing means of the weighing conveyors.

4,214,641

DRIVE FOR SELF-PROPELLED LAWN MOWERS

Hans Hauser, Fredericktown, Ohio, assignor to The J. B. Foote Foundry Co., Fredericktown, Ohio

Filed Jun. 14, 1978, Ser. No. 915,569
Int. Cl.[2] B62D *51/04;* A01D *35/26*
U.S. Cl. 180—19 R 4 Claims



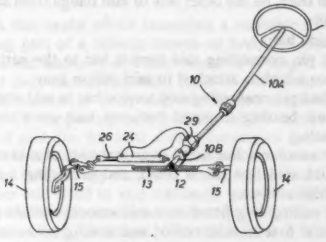
1. In combination, a drive shaft, a driven gear mounted on a shaft parallel to said drive shaft, a pinion gear rotatably mounted on said drive shaft and having teeth engageable with said driven gear, said pinion gear having a bore through which said drive shaft extends, an outer end of said pinion gear having diametrically-opposite shoulders on common sides thereof and having slanted surfaces on the opposite sides, a drive pin affixed to said drive shaft and extending outwardly on opposite sides thereof, said pin engaging said shoulders when said pinion gear is driving said driven gear, and said pin riding up the slanted surfaces when said pinion gear is rotating faster than said drive shaft, a coil spring located on said drive shaft and bearing against the end of said pinion gear opposite the end having the shoulders, means extending outwardly from said drive shaft backing up said coil spring to maintain it under compression, and a spring cover located around said coil spring, said cover having a substantially closed end extending between an end of said coil spring and said backup means, said cover having an open end extending over an end portion of said pinion gear and being slidably received thereon, whereby said pinion gear can move longitudinally of said drive shaft while said cover is stationary, said cover being sufficiently long to always enclose said coil spring for any position of said pinion gear.

4,214,642

POWER-ASSISTED STEERING DEVICE

Jean L. R. Dauvergne, Fosses, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Feb. 14, 1978, Ser. No. 877,769
Claims priority, application France, Feb. 14, 1977, 77 04051
Int. Cl.[2] B62D *5/08*
U.S. Cl. 180—132 7 Claims



1. A power assisted steering device comprising a rotatable steering column consisting of two aligned parts fastened respectively to a steering control means and to a steering operat-

ing means, the said parts having a relative angular movability limited by abutment means and being connected to one another by a torsion bar, and assistance means operable in response to a relative movement of the said parts to act in the same direction as the steering operating means so as to assist the action thereof, characterised in that the said torsion bar is plain and cylindrical from end to end thereof and has a substantially uniform cross section along its length and has one of its ends fastened to one of the said parts in any relative angular position and the other of its ends fastened to the other said part by bonding means in a controlled angular position.

4,214,643

AUTOMOTIVE VEHICLE POWER STEERING SYSTEM

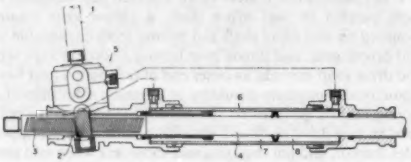
Shogo Yamanaka, Fuji, and Masanori Kouda, Atsugi, both of Japan, assignors to Atsugi Motor Parts Co., Atsugi, Japan

Filed Aug. 10, 1978, Ser. No. 932,481

Claims priority, application Japan, Jun. 13, 1978, 53-81477[U]

Int. Cl.[2] B62D *5/08*

U.S. Cl. 180—148 **6 Claims**



1. In a power steering system for an automotive vehicle, comprising a steering wheel shaft, a pinion gear, a vehicle wheel operating rod formed with a rack in meshing engagement with the pinion gear, and a hydraulic actuator with two hydraulic pressure chambers, selective supply of hydraulic fluid under pressure to these chambers selectively impelling the wheel operating rod in the one or the other longitudinal direction:

a control valve mechanism, fitted between said steering wheel shaft and said pinion gear so that said pinion gear is rotationally driven by rotation of said steering wheel shaft, comprising:

a housing;

a rotor journalled in said housing and coupled to said pinion gear;

a stub shaft aligned coaxially with said rotor and projecting into a hole therein;

a flange on the end of said stub shaft inside the rotor, and two spool valves formed in the rotor and actuated by relative movement of the flange and said rotor, which selectively communicate the hydraulic pressure chambers to hydraulic pressure, or drain them;

a sleeve extending from said flange coaxially with said stub shaft, on the other side of said flange from said stub shaft;

a torsion bar;

a first pin connecting said torsion bar to the part of the rotor which is attached to said pinion gear;

a second pin connecting said torsion bar to said stub shaft;

a thrust bearing disposed between said rotor and said housing;

a first annular collar fitted over that part of said rotor to which said first pin is fitted, and providing a smooth outside surface;

a first sealing ring fitted over said smooth outside surface of said first annular collar, and sealing between it and said housing;

a second annular collar fitted over said rotor and projecting over the outside of said thrust bearing, and providing a smooth outside surface;

a second sealing ring fitted over the smooth outside surface of said second annular collar, and sealing between it and said housing; and,

two radial bearings, one fitted between said stub shaft and said rotor, and the other fitted between said sleeve and said rotor.

4,214,644

MOTORIZED TWO-WHEEL VEHICLE HAVING A V-TYPE ENGINE WITH ANGULARLY OFFSET CYLINDER HEADS

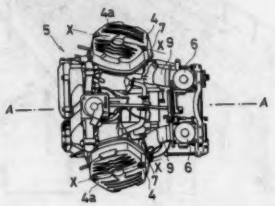
Minoru Matsuda, Chofu, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1978, Ser. No. 952,133

Claims priority, application Japan, Oct. 22, 1977, 52-141388[U]

Int. Cl.[2] B62K *11/04;* **F02B** *75/24*

U.S. Cl. 180—226 **3 Claims**



1. A motorized two-wheel vehicle comprising a frame, front and rear wheels mounted on said frame, a V-type engine mounted on the frame in a central portion thereof, said engine having a longitudinal axis and including at least one pair of left and right cylinders, and carburetors connected to respective cylinders and mounted rearwardly of the engine on the frame, each cylinder including a cylinder block and a cylinder head, said cylinder head having a cross-flow pattern with an axis, means mounting said cylinder head on said block in an angularly offset position such that the axis of the cross-flow pattern of the cylinder head extends inwardly towards the rear relative to the longitudinal axis of the engine and forms an angle therewith, and connecting pipes joining the carburetors with respective cylinder heads, each connecting pipe being substantially rectilinear.

4,214,645

METHOD OF AND MEANS FOR LOUDSPEAKER SOUND WAVE DISTRIBUTION

Richard G. Plourde, Ashland, Mass., assignor to Avid Corporation, East Providence, R.I.

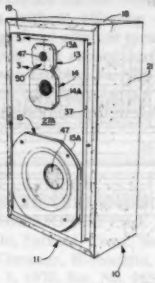
Filed Nov. 9, 1978, Ser. No. 959,348

Int. Cl.[2] G10K *11/00;* **H05K** *5/00*

U.S. Cl. 181—148 **6 Claims**

1. A high frequency loudspeaker structure comprising a box having a front panel provided with an orifice, a face plate provided with an orifice, said face plate being secured to the face of said front panel with the orifices of said front panel and said face plate being in alignment, said face plate and said front panel each having a plurality of sides, said face plate having a smaller peripheral dimension than said front panel whereby when said face plate is secured to said front panel the sides of the face plate project forwardly from said front panel as raised edges, a forward wall having front and rear surfaces and being of a predetermined thickness and having an orifice therethrough, said forward wall having a plurality of sides equal in number to the sides of said face plate, the sides of said forward wall having strips projecting from the edges thereof whereby said strips engage with the edges of said face plate to connect said forward wall to said face plate, the orifice of said forward wall being aligned with said face plate orifice when said front

wall strips are connected with said face plate edges; a speaker positioned in the opening defined by the orifices of said face plate, front panel and forward wall, said speaker having a mounting plate which includes a generally flat section over at least a portion thereof and having a central passage defined by a curved surface extending from said flat section, said mounting plate of said speaker extending forward of said face plate a



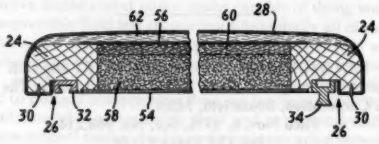
distance substantially equal to the thickness of said forward wall, whereby when said forward wall is connected with said face plate the flat section of said mounting plate lays in the same plane as the front surface of said forward wall with said flat section of said mounting plate and said front surface of said forward wall providing a generally continuous and uninterupted surface.

4,214,646

SPACE DIVIDER AND ACOUSTIC PANEL

Felipe Planes, High Point, N.C.; Charles A. Eckerline, Ladysmith, Wis., and Gordon A. Erickson, St. Paul, Minn., assignors to Conwed Corporation, St. Paul, Minn.

Filed Jun. 19, 1978, Ser. No. 916,496
Int. Cl.² E04B *1/343, 1/99*
U.S. Cl. 181—287 **19 Claims**



1. A free-standing space divider suitable for separation of spaces in an open office plan comprising:

(a) at least two half-panels having front and back faces, said half-panels being releasably connected together and easily separated and with at least a portion of their back faces in abutting relationship;

(b) support means operative to support said half-panels in a free-standing, substantially vertical position; and

(c) at least one said half-panel being an acoustic half-panel comprising:

(i) a frame having a front face and a back face;

(ii) a first layer affixed to said back face of the frame and a second layer affixed to said front face of the frame, a core being defined between said two layers and at least the second of said layers permitting the ingress of sound;

(iii) acoustically absorbent material in said core;

(iv) an acoustically absorbent blanket mounted on said front face exteriorly of said second layer;

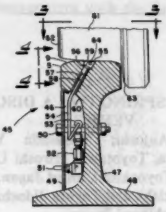
(v) a fabric cover on said front face exteriorly of said blanket.

4,214,647

AUTOMATIC RAIL GREASING APPARATUS

William M. Lutts, 3819 Valley Ridge Dr., Nashville, Tenn. 37211

Filed Feb. 24, 1978, Ser. No. 880,765
Int. Cl.² B61K *3/00*
U.S. Cl. 184—3 A **13 Claims**



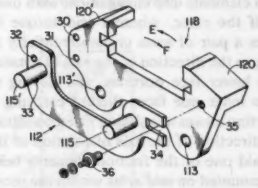
1. An automatic rail lubricating system, comprising detector means for detecting the presence of a train on such rail, said detector means comprising sensing means for sensing the wheels of a train, and lubricating means responsive to such train detection for applying a metered quantity of grease-like lubricant to such rail, said lubricating means including a pressurized supply of lubricant and valve means for delivering metered quantities of lubricant to such rail, and said detector means further including control means for operating said valve means to dispense metered quantities of lubricant in response to the sensing of a predetermined number of wheels by said sensing means.

4,214,648

VEHICLE DISC BRAKE

Toyoaki Kobayashi, Toyohashi, and Masakazu Ishikawa, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha and Toyota Jidosha Kogyo Kabushiki Kaisha, both of Aichi, Japan

Filed Dec. 2, 1977, Ser. No. 857,036
Claims priority, application Japan, Dec. 3, 1976, 51-145939
Int. Cl.² F16D *65/02*
U.S. Cl. 188—73.3 **7 Claims**



1. A disc brake which comprises a rotatable disc fixed to a rotating part of a vehicle chassis or body for rotation therewith, a pad assembly of friction material arranged on each side of said disc, a torque member fixed to a stationary part of the vehicle chassis or body and having pad assembly retaining means for supporting said pad assemblies adjacent opposite sides of said disc for axial sliding movement into engagement with said disc and preventing rotational movement thereon, an adapter being a separate and distinct part from said torque member and fixed to said stationary part in neighboring relation with the torque member so as to provide relief of clamping forces and drag forces due to normal tolerance when the brake is actuated, a caliper connected to said adapter, a pair of pilot means axially extending exclusively from and connected to one of said adapter and said caliper, said caliper being mounted for axial sliding movement over said disc as well as said pad assemblies and having means provided to effect said axial movement

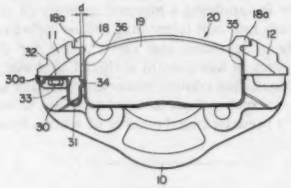
of said pad assemblies into engagement with said disc, said pilot means further comprising a pair of parallel pins axially extending from one of said adapter and said caliper and a pair of bosses extending from the other of said adapter and said caliper respectively in alignment with said pins for slidably receiving therein said pins for axial movement of said caliper.

4,214,649

ANTIRATTLE SPRING FOR A DISC BRAKE OF VEHICLES

Fumio Fujimori, Anjoshi; Masatada Yokoi, Toyotashi; Masakazu Ishikawa, Toyotashi; Hiroshi Uemura, Toyotashi, and Akira Shirai, Toyoakeshi, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha and Toyota Jidosha Kogyo Kabushiki Kaisha, both of Aichiken, Japan

Filed Jan. 9, 1978, Ser. No. 868,214
Claims priority, application Japan, Jan. 8, 1977, 52-1095
Int. Cl.[2] F16D 65/02
U.S. Cl. 188—73.5 **6 Claims**



1. A disc brake having a rotor and including a pair of opposed friction faces, comprising:

a fixed torque taking member having a pair of anchoring faces extending in the direction of the axis of rotation of the rotor and circumferentially spaced so as to define a recess therebetween,

a pair of friction elements respectively disposed in a plane adjacent the opposed friction faces of the rotor,

hydraulic fluid acting means adapted to urge one of the friction elements into engagement with one of the friction faces of the rotor, wherein said torque taking member includes a pair of arms circumferentially spaced and extending in the direction of the axis of rotation of the rotor, having lower face portions, and having said anchoring faces in inner side faces thereof carrying said hydraulic fluid acting means in a sliding fitted condition on said arms in the direction of the axis of rotation of the rotor,

at least said one of the friction elements being slidably directly mounted on said arms within the recess in the direction of the axis of rotation of the rotor with a clearance formed between one of said anchoring faces and a corresponding edge of said one of said friction elements, and

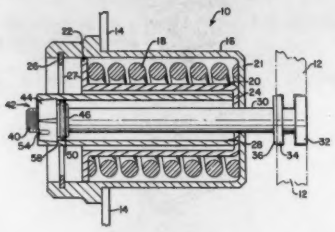
antirattle means including a U-shaped resilient sheet metal middle portion located entirely outside of the clearance and disposed within the plane of said one of said friction elements with one end secured to the lower face portion of one of the arms and the other end engaging said corresponding edge of said one of the friction elements to circumferentially urge the latter towards anchoring against the opposed anchoring face of the other of said arms while maintaining said clearance due to an elastic energy prestored within said resilient sheet metal middle portion when installed, wherein the other end of the antirattle means is rounded to form an arc such that said corresponding edge of said one of said friction elements is in a plane tangent to said arc.

4,214,650

BRAKE ADJUSTER HAVING MULTI-SIDED INTERNAL BROACH

Richard L. Crossman, Tallmadge, and Robert J. French, Wadsworth, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Aug. 14, 1978, Ser. No. 933,406
Int. Cl.[3] F16D 65/54
U.S. Cl. 188—196 R **4 Claims**



1. A brake adjuster comprising:

a casing;

a spring follower maintained within said casing and operative between first and second ends thereof;

a tube in contacting engagement with said spring follower and movable therewith;

a shaft centrally maintained within said tube, and passing through an end of said spring follower, said shaft being adapted for connection with a pressure plate;

a broach, having a plurality of cutting edges thereon, connected to said shaft and in cutting engagement with the interior surfaces of said tube; and

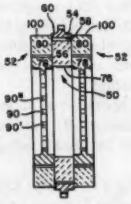
a guide interconnected between said broach and said shaft for centrally maintaining said shaft within said tube, said guide including a plurality of guide points positioned between adjacent cutting edges and a seal about said guide points and in contacting engagement with the interior surface of said tube.

4,214,651

FRICTION DISC FOR AN AIRCRAFT BRAKE

Joseph A. Cunningham, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 6, 1978, Ser. No. 958,214
Int. Cl.[2] F16D 65/12
U.S. Cl. 188—251 R **10 Claims**



1. In a wheel and brake assembly having a series of disc members which are moved into engagement with each other to effect a brake application, each of said disc members being subjected to degradation caused by oxidation resulting from a brake application, the improvement wherein each disc member comprises:

a metallic drive ring having rubbed surfaces and non-rubbed surfaces, said drive ring having a first series of drive slots

adjacent to said non-rubbed surfaces and a series of torsional keys adjacent to said rubbed surfaces; and

a carbon friction member having friction producing surfaces that extend from a first peripheral surface to a second peripheral surface, said first peripheral surface having a second series of drive slots thereon which engage said series of torsional keys to establish a coupling, said coupling having sufficient flexibility to permit said metallic drive ring and said carbon friction member to respond to temperature levels without affecting each other, said friction producing surfaces adjacent to said second peripheral surface engaging said rubbed surfaces on adjacent metallic drive rings to establish barriers which inhibit the passage of air to said coupling during a brake application and thereby prevent degradation to said first peripheral surface.

4,214,652

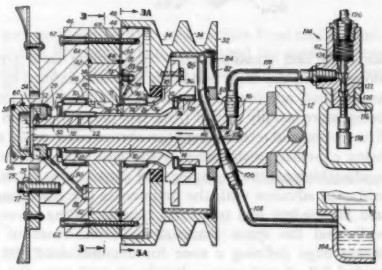
VARIABLE POWER TRANSMISSION AND ABSORPTION DEVICE

Raymond N. Quenneville, Suffield, Conn., assignor to The Jacobs Manufacturing Company, Bloomfield, Conn.

Filed Dec. 1, 1978, Ser. No. 965,424

Int. Cl.[2] F16D *31/00*

U.S. Cl. 192—58 R **37 Claims**



1. An apparatus comprising a first member, a second member, positive displacement pump means capable of doing work on a compressible fluid and recovering substantially all of such work during an expansion cycle and having an inlet port and an outlet port and interconnecting said first member and said second member, said positive displacement pump being adapted to pump a compressible fluid, an incompressible fluid and a mixture of a compressible fluid and an incompressible fluid, flow control means, duct means communicating between said flow control means and said inlet port of said positive displacement pump means, pressure control means communicating with said outlet port of said positive displacement pump means, and sump means containing an incompressible fluid and communicating with said flow control means.

4,214,653

FRICTION CLUTCHES

Howard Slack, Sheffield, England, assignor to GKN Transmissions Ltd., Birmingham, England

Filed Oct. 25, 1978, Ser. No. 955,122

Claims priority, application United Kingdom, Nov. 1, 1977, 45353/77

Int. Cl.[2] F16D *13/56, 21/06*

U.S. Cl. 192—48.7 **4 Claims**

1. A dual friction clutch comprising

a driving member;

a first driving friction face on the driving member;

a first driven member having two friction faces, one for engagement with the first driving face;

a first pressure plate arranged to engage the second friction face of the first driven member;

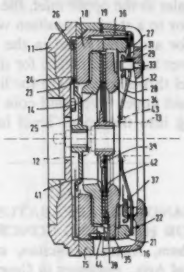
a second driving friction face on the driving member;

a second driven member having two friction faces, one for engagement with the second driving face;

a second pressure plate arranged to engage the second friction face of the second driven member;

a cover member secured to the driving member;

a first plate spring interposed between the cover member and the first pressure plate to urge the first driven member into frictional engagement with the first driving face;



a second plate spring interposed between the first pressure plate and the second pressure plate to urge the second pressure plate into frictional engagement with the second driving face, the second plate spring exerting a lower force than the first plate spring so as only partially to counteract the force of the first spring on the first pressure plate; and

release means operatively connected to retract the first pressure plate on initial release movement thereof and for also retracting the second pressure plate on further release movement thereof.

4,214,654

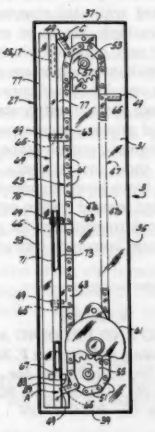
COIN TRANSFER MEANS FOR VENDORS

Harry H. Pryor, Crestwood, and Calvin L. Chumley, St. Louis County, both of Mo., assignors to UMC Industries, Inc., Stamford, Conn.

Filed Dec. 22, 1977, Ser. No. 863,122

Int. Cl.[2] G07F *1/04*

U.S. Cl. 194—1 E **31 Claims**



1. A vendor comprising dispensing means, coin controlled means for controlling said dispensing means, and guide means

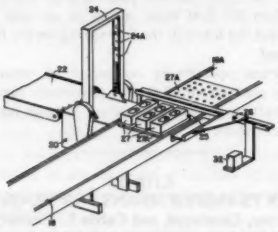
for guiding coins to said coin controlled means, said guide means having an inlet at an upper level above said coin controlled means, coins entering the guide means through said inlet gravitating down from said inlet to said coin controlled means, and coin transfer means for receiving coins at a level below said upper level, elevating them to said upper level, and entering them in said upper level inlet, said coin transfer means comprising a lower inlet for entry of coins therein at said lower level, a conveyor having a coin lifter thereon, said conveyor being movable to carry the lifter through a path extending from the lower inlet to the upper inlet, the lifter being movable with the conveyor to a starting position wherein it underlies a coin deposited for a desired vend in the coin transfer means through said lower inlet, and means for driving the conveyor for upward travel through said path for lifting of said coin by the lifter up to said upper level, said coin then moving off the lifter and passing into the upper level inlet for said desired vend.

4,214,655

ARTICLE HANDLING APPARATUS ESPECIALLY USEFUL FOR HANDLING CONCRETE BLOCKS

Robert R. Bernham, Apache Junction, and Harold Christy, Phoenix, both of Ariz., assignors to George R. Cogar, Frankfort, N.Y.

Filed Dec. 9, 1977, Ser. No. 859,044
Int. Cl.[2] B65G *37/00*
U.S. Cl. 198—374 **1 Claim**



1. A concrete block inverting machine comprising, in combination, means for stopping and positioning blocks of concrete that are moving on a conveyor, said block inverting means cooperatively associated with said stopping and positioning means for removing multiple blocks at one time from said conveyor and placing said removed blocks down in an inverted position, said block inverting means comprising a block transfer arm located on one side of said conveyor, and gripping means located within said block transfrer arm for gripping said blocks of concrete, said gripping means comprising a pair of gripping shoes, and pneumatic pressure tube means for moving each of said gripping shoes into gripping contact with said blocks of concrete said block inventing means further comprising block pushing means located on the opposite side of said conveyor from said block transfer arm for alternatively pushing said blocks off of said conveyor instead of inverting said blocks.

4,214,656

CAP ORIENTING AND FEEDING APPARATUS

Walter McDonald, Landing, and Norbert F. Seitel, Gillette, both of N.J., assignors to Norwalt Design, Inc., Whippany, N.J.

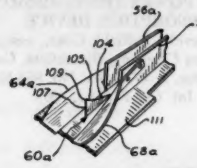
Filed Jun. 26, 1978, Ser. No. 918,773
Int. Cl.[2] B65G *47/24*
U.S. Cl. 198—380 **8 Claims**

1. Apparatus for accepting an initially presented population of randomly oriented container caps and providing an output in-line stream of said caps wherein the open ends of the caps face in an upward direction; said apparatus comprising in combination:

means for accepting said randomly oriented caps and feeding an in-line stream of said caps wherein the caps are oriented with their diameters substantially in a vertical plane;

inclined guide chute means having a base and including an input section for receiving said caps at said vertical orientation, an output section whereat said caps reside along their diameters, and a transition zone between said input and output sections whereat said caps may gravitationally tip and fall from the said vertical plane to their surfaces including said diameters; and

means for biasing the said tipping of said caps so that said caps fall with the open ends thereof facing upwardly, said means comprising a knife-edge at the bottom of said guide chute means, said edge extending longitudinally and centrally along at least the lower end of the said input section



and into said transition zone and ending in a portion sloped upwardly from said chute base and defined by first and second adjoined sections, with said second section being more steeply sloped from said chute base than said first section and terminating at an abrupt edge; guide walls being provided at the sides of the said input section for sandwiching and constraining said caps against tipping as said caps advance with the peripheries thereof riding on said knife-edge; said transition zone including diverging walls and the space immediately downstream of said abrupt edge defining a zone for unconstrained and unguided fall of said caps, whereby at said zone the caps riding on said knife-edge become unconstrained and tip and fall in the direction of their top surfaces, due to the center of gravity of said caps effecting a tipping torque about said knife-edge support in said direction, and due to the unconstrained and unguided fall of said caps upon passing said abrupt edge.

4,214,657

TOOTHBRUSH HOLDER AND STERILIZER

Billy G. Winston, 1900 E. 4th St., Fort Worth, Tex. 76102

Filed Oct. 13, 1978, Ser. No. 951,193
Int. Cl.[2] B65D *81/24;* A47K *1/09*
U.S. Cl. 206—209.1 **2 Claims**

1. A toothbrush holder and sterilizer comprising;

receptacle means comprising structure forming a plurality of side-by-side receptacles each having a cavity for receiving a toothbrush,

each of said receptacles having first and second open opposite ends,

first removable cap means comprising a single member adapted to close said first ends of said receptacles,

second removable cap means comprises a single member adapted to close said second ends of said receptacles, and

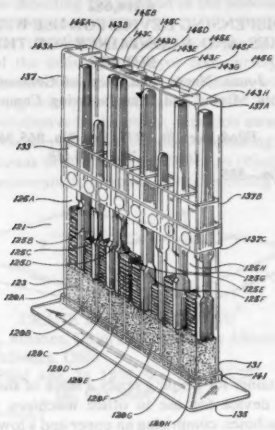
a plurality of removable, absorbent, sponge-like means each carrying a sterilizing fluid adapted to be inserted into said cavities of said receptacles adjacent said first cap means,

said removable, absorbent, sponge-like means each having a size sufficient to engage the walls of its cavity,

said receptacles with said removable, absorbent, sponge-like means located in said cavities and having their opposite ends closed with said first and second cap means, being

adapted to enclose a toothbrush within each of said cavities,

said cavities of said receptacles being free from obstructions whereby said removable, absorbent, sponge-like means



may be pushed within said cavities from said second ends to said first ends when said second cap means is removed and out of said first ends when said first caps means is removed.

4,214,658

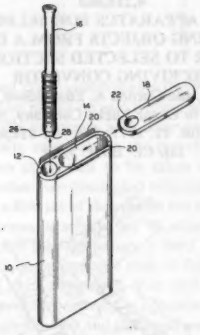
SMOKING SYSTEM

Floyd Crow, Cresthill, Ill., assignor to Simple Pleasures, Inc., Romeoville, Ill.

Filed Aug. 21, 1978, Ser. No. 935,675

Int. Cl.[2] A24F *9/00*

U.S. Cl. 206—244 **6 Claims**



1. A smoking system comprising: a receptable having a first cavity and a second cavity therein, said second cavity being shallower than said first cavity and having a thick base; openings in said receptacle leading to each of said cavities; smoking pipe means removably disposed in said first cavity and having a bowl portion disposed on one end thereof; the length of said smoking pipe means being greater than the depth of said second cavity; smoking material disposed in said second cavity whereby said bowl portion of said smoking pipe means can be filled with said smoking material by inserting said smoking pipe means in said second cavity and tamping said bowl portion of said smoking pipe means against said thick base of said second cavity while gripping the other end of said smoking pipe means; cover means associated with said receptacle across said openings of said cavities, said cover means movable to alternatively close or expose one or both of said cavities.

4,214,659

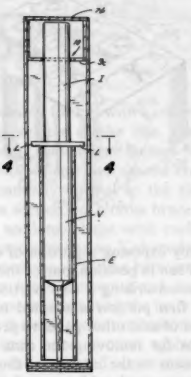
EMERGENCY MEDICATION PACKAGE

Harold R. Jaeschke, Milwaukee, and Daniel J. Boyle, Hartland, both of Wis., assignors to Champion International Corporation, Stamford, Conn.

Filed Oct. 2, 1978, Ser. No. 947,773

Int. Cl.[2] B65D *83/10*

U.S. Cl. 206—365 **2 Claims**



1. An emergency medication package for a hypodermic syringe composed of a cylinder having an open end provided with finger engaging ears and another end provided with a projecting needle and a medication vial connected to the open end and slidable into same for dispensing of the medicine through the needle, said package being formed from a one piece foldable cardboard blank and comprising a generally tubular package body having upper and lower spaced ends; a longitudinal partition dimensioned to receive the cylinder therewithin, said longitudinal partition extending within said package body from said lower end towards but short of said upper end and wherein the distance from the upper edge of said longitudinal partition to the lower end of said package body is greater than the total length of said cylinder and said needle such that the finger engaging ears of the cylinder rests on the upper edge of said longitudinal partition, which thus spaces the needle from the lower end of the package body and arrests the syringe against movement towards the lower end, thereby reducing the likelihood of breakage of the syringe, said longitudinal partition comprising a plurality of sidewalls hingedly joined together by fold lines in said blank and forming a tubular structure within said tubular package body which circumscribes said cylinder, at least one of said side walls being hingedly connected by a fold line to said tubular package body; and a transverse partition extending across the interior of said package body in the region of said upper end and having a cut out in which a portion of the vial is receivable, said transverse partition comprising a flap member hingedly connected by a fold line in said blank to said tubular package body.

4,214,660

CARTON FOR BEVERAGE CANS

Letcher B. Hunt, Jr., 2325 W. Avon Rd., Rochester, Mich. 48063

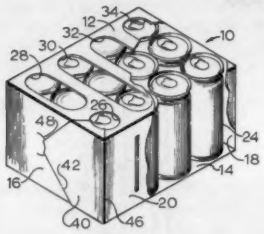
Filed Mar. 19, 1979, Ser. No. 21,736

Int. Cl.[2] B65D *5/46*

U.S. Cl. 206—427 **15 Claims**

1. A carton for round cans all having the same diameter, said

carton comprising: a rectangular box having front and back panels, two end panels, a bottom panel, said front and back panels being spaced apart by approximately "n" can diameters, said end panels being spaced apart by approximately "m" can diameters, said cartons providing "n" times "m" can positions and being adapted to receive a can in each position with the can bottom and top adjacent the bottom and top panels, respectively, one of said bottom and top panels defining a matrix of inspection holes in an arrangement such that a hole boundary extends across each can position within the perimeter of each



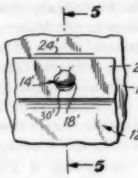
position thereby exposing a portion of each can to view and retaining each can in position, one of the other panels defining a tear line circumscribing a first portion of said other panel whereby said first portion is adapted to be removed from a second portion of said other panel to provide an access opening in said box for removing the cans from the carton and returning the cans to the interior of the carton, and an additional panel connected with one of the other panels and adapted to extend across said access opening to retain the cans which are returned to the interior of the carton.

4,214,661

POINT OF PURCHASE DISPLAY

Mark A. Turetsky, 598 Broadway, New York, N.Y. 10012, and Robert E. Robbins, 337 Garden City St., Islip Terrace, N.Y. 11752

Filed Apr. 27, 1979, Ser. No. 34,034
Int. Cl.[2] B65D *73/00*
U.S. Cl. 206—466 **14 Claims**



1. A display card for holding an article, said article having a hole therein, comprising:

a sheet comprising a tearable material;

a tab, said tab being attached at one end to said sheet, the other end of said tab being free and extending away from said sheet, at least a portion of said free end of said tab being wider than the width of at least a portion of said attached end of said tab and the width of said hole in said package, said tab being insertable through said hole, whereby, because of said width differential between said tab and said hole, said article is retained on said card after insertion of said tab through said hole, and said article may be removed from said card by pulling said article;

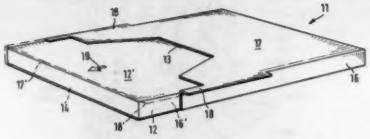
a slit in said sheet, said slit being proximate but not touching said attached tab end, said slit limiting the possible extent of any tearing of said sheet when said article is pulled in the direction of said slit for removal of said article from said display card.

4,214,662

SHEET DISPENSING DEVICE FOR USE WITH COPYING MACHINES, AND A CONTAINER FOR THE STACK OF SHEETS

Walter K. Jonas, Neuss, Fed. Rep. of Germany, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 30, 1977, Ser. No. 865,942
Int. Cl.[2] B65D *85/48*
U.S. Cl. 206—555 **2 Claims**



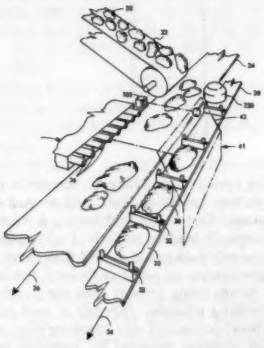
1. A container for keeping ready a stack of sheets in a sheet dispensing device for use in office machines, in particular copying machines, comprising an upper and a lower cover face parallel to the sheets in a stack of sheets, two longitudinal sides joining said upper and lower faces, a front, and a rear face, the front face of which, as well as part of the upper cover face, is removable along a parting line in said longitudinal sides and in said upper cover face for the removal along said line of a portion of said container, and a flange-like projection on said upper cover face and planar with said upper cover face, extending laterally beyond at least one longitudinal side and disposed such that said projection extends from said parting line of said longitudinal side along approximately half of the remaining portion of said upper cover face.

4,214,663

TRANSFER APPARATUS FOR SELECTIVELY TRANSFERRING OBJECTS FROM A DELIVERY CONVEYOR TO SELECTED SECTIONS OF A RECEIVING CONVEYOR

Fredrick R. Schopp, and Gordon A. Edmundson, both of Seattle, Wash., assignors to Oscar Lucks Company, Seattle, Wash.

Filed Jul. 11, 1977, Ser. No. 814,427
Int. Cl.[2] B07C *5/04*
U.S. Cl. 209—552 **20 Claims**



1. A transfer apparatus for selectively transferring objects from a delivery conveyor to selected sections of a receiving conveyor of the type having a longitudinal portion thereof

juxtaposed the delivery conveyor along a portion of the delivery conveyor intermediate to its ends comprising:

(a) means for detecting the position of the objects on the delivery conveyor;

(b) means for detecting the position of the selected sections of the receiving conveyor;

(c) means for transferring objects from the intermediate portion of the delivery conveyor transversely with respect to the direction of travel of the delivery conveyor to the receiving conveyor sections; and

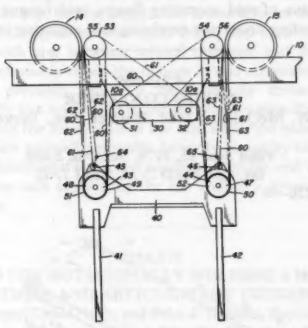
(d) means, responsive to the object detection means and the receiving section detection means, for actuating the object transfer means to effect the transfer of an object from the delivery conveyor to a section of the receiving conveyor.

4,214,664

CRANE SAFETY REEVING

Karl L. Polen, Alliance, Ohio, assignor to The Alliance Machine Company, Alliance, Ohio

Filed Aug. 24, 1978, Ser. No. 936,586
Int. Cl.² B66C *17/06*
U.S. Cl. 212—142.1 **10 Claims**



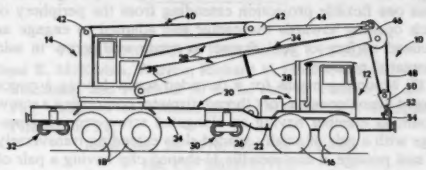
1. An overhead crane comprising a traveling trolley, spaced apart cable take-up means on said trolley, separate drive means for each cable take-up means, a lift beam suspended below and movable vertically relatively to the traveling trolley, at least four cables, two connected to be taken up by one take-up means and the other two connected to be taken up by the other take-up means, a first set of sheaves on the trolley adjacent said one take-up means, a second set of sheaves on the trolley adjacent the other take-up means, a third and a fourth set of sheaves respectively at opposite ends of the lift beam, an intermediate sheave deck depending from said trolley, a fifth and sixth set of sheaves respectively at opposite ends of said sheave deck intermediate the first and third and second and fourth sets of sheaves respectively, said two cables having one cable being reeved in part around said first and third sets of sheaves and dead ending on said lift beam adjacent said third sheaves and the other cable reeved in part around said third set of sheaves and around said second and fourth sets of sheaves to dead end on said lift beam adjacent the fourth set of sheaves, and the other two cables having one cable being reeved in part around said second and fourth sets of sheaves and dead ending on said lift beam adjacent said fourth sheaves and the other cable reeved in part around said fourth set of sheaves and around said first and third sets of sheaves whereby both ends of the lift beam are in part suspended from each of the two take-up means, each of said take-up means having an equal vertical reeving.

4,214,665

TRUCK MOUNTED RAILROAD CRANE BOOM SECTION

Timothy L. Newman, 700 N. Liberty, Jerseyville, Ill. 62050

Filed Jun. 1, 1978, Ser. No. 911,627
Int. Cl.² B66C *23/06*
U.S. Cl. 52—726 **5 Claims**



1. A crane boom assembly for use with a crane boom superstructure in a railroad vehicle or the like, comprising two elongated boom sections, each boom section having an enclosed exterior wall with at least two spaced cross brace elements extending substantially normal to the elongated construction of each boom section, each cross brace element having a L-shaped cross sectional shape with each cooperating pair of cross brace elements having an X-shaped configuration, interconnecting strut mmeans extending between the free ends of the X-shaped cross brace elements, and each of said X-shaped cross brace elements contacting the inner surface of the enclosed exterior wall through the interconnecting strut means in order to support each boom section against twisting or bending thereof along the elongated construction thereof.

4,214,666

TUBULAR DISCHARGE ENVELOPE COMPOSED OF A POLYCRYSTALLINE TRANSPARENT ALUMINA AND A HIGH-PRESSURE VAPOR DISCHARGE LAMP USING THE SAME

Isao Oda, Nagoya; Masayuki Kaneno, Tokoname, and Noboru Yamamoto, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Nov. 24, 1978, Ser. No. 963,397
Claims priority, application Japan, Dec. 2, 1977, 52-144035
Int. Cl.² H01K *1/28*; H01J *61/30*; C01F *7/02*
U.S. Cl. 220—2.1 R **3 Claims**

1. A tubular discharge envelope composed of a polycrystalline transparent alumina for a high-pressure vapor discharge lamp, characterized in that the polycrystalline transparent alumina contains 0.01 to 0.2% by weight of each of MgO, La_2O_3 and Y_2O_3 and has an average crystal grain size of 20 to 60 μm and crystal grains of not more than 20 μm occupy not more than 30% per unit area of the envelope.

3. In a high-pressure vapor discharge lamp having a tubular discharge envelope of polycrystalline transparent alumina, the improvement comprising that the polycrystalline transparent alumina contains 0.01 to 0.2% by weight of each of MgO, La_2O_3 and Y_2O_3 and has an average crystal grain size of 20–60 μm. and crystal grains of not more than 20 μm. occupying not more than 30% per unit area of said envelope.

4,214,667

SCREW MOUNTING MECHANISM FOR ELECTRICAL OUTLET BOX

John L. Lass, Homewood, Ill., assignor to Square D Company, Palatine, Ill.

Filed Aug. 20, 1979, Ser. No. 68,314
Int. Cl.² F16B *39/00*; H02G *3/08*
U.S. Cl. 220—3.2 **22 Claims**

1. An outlet box having a plurality of substantially linear walls defining a receptacle space with at least one wall having mounting means for supporting a screw having a peripheral thread, said one wall having an elongated passage for receiving

said screw and a pair of axially spaced slots extending transversely of said elongated passage, retaining means including at least two retaining elements in the respective slots, each retaining element having an opening substantially equal to a major diameter of said thread with at least one of said openings having its center axially offset from the axis of said elongated passage so that an axis through the centers of said openings is angularly related to the axis for said elongated passage, and at least one flexible projection extending from the periphery of each opening towards the center and adapted to engage an inclined surface of said thread to retain said screw in said elongated passage.

17. Mounting means for a threaded screw having a major thread diameter and a root thread diameter comprising a screw mounting member having an elongated screw receiving passage with a pair of axially spaced slots extending transversely of said passage, a non-metallic U-shaped clip having a pair of spaced legs received into said slots with each leg having a generally circular opening therein with the center of at least

one opening being transversely offset from an axis for said elongated passage, each leg having a projection extending generally radially from the periphery of an associated opening toward the center thereof for engaging a surface of said thread to releasably retain said threaded screw in said passage.

20. A non-metallic mounting clip for use in attaching a threaded screw having a major thread diameter and a minor thread diameter to a wall, said clip being generally U-shaped and having a bite portion and a pair of generally parallel legs extending from an inner surface of said bite portion, each leg having a substantially circular opening spaced from said inner surface with the spacing of the center of one opening being greater than the spacing of the center of the other opening, each opening having an integral projection extending from the periphery thereof toward said bite portion and having an arcuate inner edge having a radius of approximately one-half said minor thread diameter, each projection having an inclined surface extending from said edge toward the periphery of said opening and each opening having a diameter substantially equal to one-half said major thread diameter.

4,214,668

ELECTRICAL BOX AND MOUNTING BRACKET ASSEMBLY

Steve W. Neff, Clinton, Iowa, and Harold T. Pate, Solon, Ohio, assignors to Indian Head Inc., New York, N.Y.

Filed Feb. 21, 1979, Ser. No. 13,152
Int. Cl.[2] H02G *3/08*; F16B *2/24*
U.S. Cl. 220—3.3 **8 Claims**

1. An electrical outlet box and mounting bracket assembly comprising:

a synthetic resin box forming an open-sided enclosure having at least one side wall;

a pair of spaced channel elements on said side wall, each of said channel elements defining a respective channel space and including:

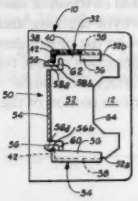
a retention plate extending substantially parallel to said side wall;

a spacer plate projecting between and interconnecting the retention plate and the side wall; and

an engaging tab projecting normal to said retention plate and to said spacer plate at one end of the respective channel space, the distance separating the engaging tabs being less than the distance separating the spacer plates; and

an L-shaped bracket including:

an engaging flange having a first edge and having side edges extending into the channel elements at a location between the box and the respective retention plates of the channel elements into which the respective side edges extend;



a mounting flange extending normal to the plane of the engaging flange and having one edge thereof connected to said first edge of said engaging flange; and

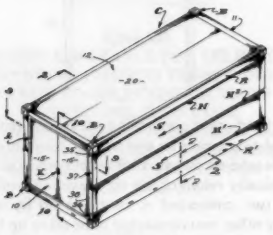
flexible, resilient tongue means connected to said engaging flange adjacent its first edge connected to said mounting flange and engaging said engaging tabs to prevent movement of said bracket in a direction normal to the plane of said mounting flange, said tongue means including undercuts receiving said engaging tabs.

4,214,669

CARGO CONTAINER

William W. McQuiston, 1664 Shattuck Ave., Berkeley, Calif. 94709

Filed Jan. 15, 1979, Ser. No. 3,406
Int. Cl.[2] B65D *7/26*; B65J *1/02*
U.S. Cl. 220—6 **9 Claims**



1. An elongate, box-like collapsible cargo container with rectangular top, bottom and end walls and sectional side walls, each wall having inside and outside surfaces on spaced inside and outside planes; said top and bottom walls having outer rectangular load-supporting frames including laterally extending spreaders and longitudinally extending side beams and inner panel structures closing those frames; said sectional side walls including top and bottom longitudinally extending vertical rails integrally joined with their related beams of the top and bottom walls and establishing straight, flat, downwardly and upwardly disposed edges and elongate rectangular normally vertical upper and lower panels with straight, flat upper and lower edges normally establishing flat bearing engagement with their opposing edges of the side wall structures, normally vertical load supporting sectional columns at the ends of the side walls having top and bottom sections fixed to the ends of their related rails and to the beams and spreaders of their related top and bottom wall frames and intermediate upper and lower sections fixed to their related ends of their related sections; the adjacent sections of the columns have flat normally

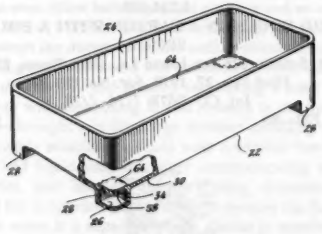
opposing ends; a first longitudinal hinge with its axis substantially coincidental with the normal outside planes of the panels and the plane of the opposing edges thereof and fixed thereto to extend longitudinally of the panel and between their related column sections, second hinges extending longitudinally of and connecting the rails with their related panels on axes substantially coincidental with the inside planes of the panels and the planes of the opposing edges of the panels and the rails and extending between the column sections related thereto; said end walls have unitary rectangular outer frames with top, bottom and side members and inner panel closures, the outer frames normally occur within the inside ends of the top, bottom and side walls with their outside planes substantially coincidental with the end planes thereof, elongate lateral hinges with axes substantially coincidental with the inside planes of the end walls and the bottom wall and securing the end walls to their related spreaders of the frame of the bottom wall, the top and side members of the end wall frames have normally longitudinally outwardly opening channels at and coextensive with their outermost edges, the column sections at the ends of the side walls and the spreaders at the ends of the top wall have elongate longitudinally inwardly projecting flanges on planes inward of the inside planes of the top and side walls and normally slidably frictionally engaged in and establishing stopped engagement at the bottoms of the channels of their related end frame members, said channels reinforce their related flange sections and bridge between and releasably lock and hold the flanges of the top, bottom, upper and lower column sections in fixed vertical alignment with each other, and lock means engageable with and between related channels and flanges to normally releasably retain the flanges in said channels; the end walls are pivotally movable longitudinally inwardly and downwardly to a horizontal collapsed position atop the bottom wall between the lower rails of the side walls, the panels of the side walls are pivotally movable laterally inwardly and downwardly to horizontal collapsed positions atop the end walls and with the top rails supporting the top wall in a down position thereabove.

4,214,670

METHOD FOR ROTATIONALLY MOLDING A HOLLOW ARTICLE AND ARTICLE MADE THEREBY

Sidney Berger, Great Neck, and John J. Cubieta, Bayshore, both of N.Y., assignors to United Utensils Company, Inc., Port Jefferson, N.Y.

Filed Dec. 20, 1978, Ser. No. 971,366
Int. Cl.[2] B65D *1/00*; B29C *5/04*
U.S. Cl. 220—70 **9 Claims**



1. A rotationally molded hollow rigid plastic tank having a main compartment bounded by a bottom wall and a side wall and a plurality of hollow legs extending below the tank bottom and being an integral part of the tank;

said hollow legs each having a generally flat metallic cover overlying the hollow of a leg and extending into said tank side wall;

said tank bottom wall having separator segments respectively extending over said covers to merge with said side wall in a contiguous manner to form a smooth uninterrupted bottom surface for said main compartment;

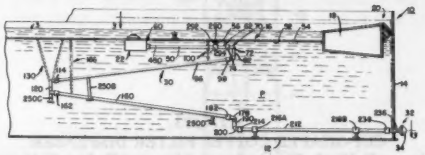
with each of said hollow legs having a leg wall which is integrally joined by rotational molding of the tank to the tank side and bottom walls with the hollow of said legs being isolated from the main compartment of said tank by the separator segments.

4,214,671

FLOATING ROOF DRAINAGE SYSTEM

Dean K. McKibbin, Warren; Richard E. Hills, Coraopolis; Joel Blackman, and Franklin A. Kuhs, both of Pittsburgh, all of Pa., assignors to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.

Filed Dec. 20, 1978, Ser. No. 971,252
Int. Cl.[2] B65D *87/18*
U.S. Cl. 220—219 **39 Claims**



1. A floating roof drainage system comprising:

a roof drain means on the floating roof;

a plurality of pipes including a first pipe connected to said drain means and a second pipe connected to another pipe connected to a drain on a tank associated with the floating roof;

a plurality of rigid pipe connections connecting individual pipes of said plurality of pipes to the next adjacent ones of said plurality of pipes, said connections being welded to said connected pipes to produce a welded connection between said connected pipes, said plurality of pipes being arranged to form a loop, said welded connections making said loop rigid and essentially continuous from said roof drain means to a tank drain whereby leakage in a floating roof drainage system is minimized;

said individual pipes each being prestressed to a predetermined degree; and

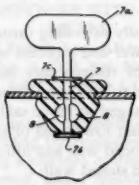
connecting means connecting selected pipes of said plurality of pipes to the floating roof.

4,214,672

CAN STOPPER

Hector Peniche, 32-55 Steinway St., Long Island City, N.Y. 11103

Filed Feb. 28, 1979, Ser. No. 15,776
Int. Cl.[2] B65D *53/00*
U.S. Cl. 220—234 **7 Claims**



1. A closure or stopper adapted to sealingly close an opening in the top of a beer or soda can, comprising in combination,

a closure element made of elastic material and having a cross-section of configuration and shape that mates with the configuration and shape of the opening in the top of

said can, said closure element having a bore extending theretrough;

an operating member having a shank portion which is rotatably mounted in said bore; said shank portion having at least one projection laterally extending therefrom the maximum lateral extent of which exceeds the minimum radius of said bore;

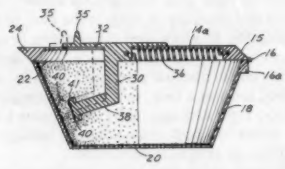
whereby when said closure element has been inserted in the can opening and the operating member is rotated a predetermined angular distance said closure element is biased against the walls of the can opening thereby sealingly closing it.

4,214,673

CUP-SHAPED COFFEE FILTER DISPENSER

Forrest D. Heath, Farmington, N. Mex., and Rodney K. Hoctor, Harlingen, Tex., assignors to Olman Heath Company, Farmington, N. Mex.

Filed Jun. 19, 1978, Ser. No. 916,595
Int. Cl.[2] B65H *3/02*
U.S. Cl. 221—259 **4 Claims**



1. A coffee filter dispenser for dispensing a single filter from a stack, comprising:

(a) cup-shaped filter holder means, of the general configuration of the filters, formed of an elastomeric material and provided with an outwardly sloped wall from a bottom wall to a full opening which is substantially larger than said closed bottom walls;

(b) cover means for said full opening enclosing said holder means integrally secured thereto and hingedly attached thereto by a thin section of said elastomeric material;

(c) there being a slit in said cover means directed from said hinged attachment toward and spaced from, an edge of said cover means;

(d) an arm reciprocally extending through said slit and terminating at its lower end adjacent said sloped wall, and arm handle means reciprocably seated on said cover means and secured to said arm through said slit, said arm handle means arranged to move said arm along said slot thereby moving said lower end of said arm toward and away from said sloped wall and lifting said cover as said arm moves up said sloped wall;

(e) an abrasive surface filter contacting and holding means secured to the end of said arm whereby said arm may be moved so that said contacting and holding means may contact a filter in said holder means, and,

(f) cover handle means depending outwardly from said cover means in alignment with said slot.

4,214,674

HYDRO PISTOL WITH PRESSURIZED WATER CONTAINER AND WITH VARIABLE WATER EJECTION CAPABILITY

Lawrence T. Jones, Playa Del Rey; Anson Sims, Granada Hills, and Ashley G. Howden, Los Angeles, all of Calif., assignors to California R & D Center, Culver City, Calif.

Filed May 30, 1978, Ser. No. 910,883
Int. Cl.[2] A63H *33/30*
U.S. Cl. 222—79 **16 Claims**

1. An improved toy water gun assembly for providing an extended projection of water comprising:

a portable container for storing water;

means for pressurizing the container to provide and maintain a supra-atmospheric pressure in the container to propel the water;

means for transporting the container in a position relative to the operator to permit pressurization of the container;

gun means fluidly connected to the container for permitting relative movement to permit discretionary aiming and for releasing a predetermined projection of water including, a housing, a flexible hose, a nozzle with an orifice limiting the water projection to a narrow stream, the hose and the nozzle being mounted in the housing, and

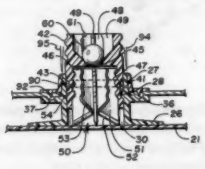
means for clamping the hose comprising a lever pivotally mounted in the housing, a first spring, the first spring continuously biasing the lever against the hose thereby clamping the same, a trigger piece pivotally mounted in the housing, the trigger piece being operatively connected to the lever, and a second spring, the second spring being mounted in the housing and urging the trigger piece away from the lever, a force exerted by the second spring capable of being overcome by a pressure pulling the trigger whereby a motion of the trigger piece is transmitted to the lever causing the lever to move away from the hose allowing flow of water therethrough.

4,214,675

LIQUID POUCH IN A CARTON WITH A POURING SPOUT

Justin M. Schmit, 126 Sea Island La., Boca Raton, Fla. 33432

Filed Feb. 27, 1978, Ser. No. 881,691
Int. Cl.[2] B67B *7/26, 7/28*
U.S. Cl. 222—83 **12 Claims**



12. A container for dispensing fluids comprising: a supporting structure for a liquid containing pouch, means included in the supporting structure for mounting the pouch therein, a flexible pouch of plastic material positioned in said supporting

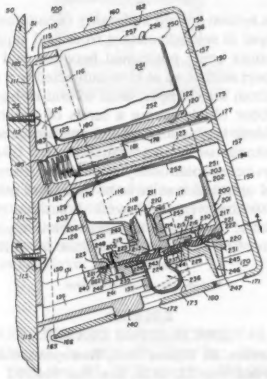
structure, said pouch being formed of seamed edges defining sides and a top, a spout sealed to the top of the pouch, said spout being positioned through the mounting means of the supporting structure and attached thereto, a piercing element telescopically fitted within the spout to open the pouch, said piercing element being carried by a tubular member slidably positioned in the spout, means included in the mounting of the tubular member in the spout to permit the tubular member and the piercing element to advance relative to the spout to slit the pouch, and means included in the mounting of the piercing element on the tubular member to advance the piercing element further into the pouch upon relative motion between the tubular member and piercing element to fold the slit portion of the pouch.

4,214,676

DISPENSER FOR LIQUID SOAP WITH TELESCOPING HOUSING MEMBERS AND CONTAINER THEREFOR

Antonio M. Cassia, Milan, Italy, assignor to Steiner Corporation, Salt Lake City, Utah

Filed May 8, 1978, Ser. No. 903,867
Claims priority, application Italy, Nov. 25, 1977, 51941 A/77
Int. Cl.[2] B67B *7/28*; B67D *5/40*
U.S. Cl. 222—83.5 **22 Claims**



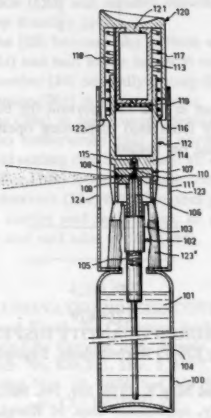
1. A dispenser for liquid soap comprising an enclosed housing including two telescoping housing members shiftable with respect to each other between a rest position and an actuating position, one of said housing members being mountable on a wall to mount the dispenser on the wall, resilient means urging said housing members to the rest positions thereof, a discharge member mounted in said housing and having a soap outlet in registration with an opening in said housing to dispense liquid soap therethrough, said discharge member including structure for removably attaching a liquid soap container thereto with the attached liquid soap container communicating with said soap outlet, said housing members being dimensioned and arranged for cooperation completely to enclose the liquid soap container when it is attached to said discharge member, pump means mounted in said housing for pumping charges of liquid soap from a liquid soap container on said discharge member and out through said soap outlet, and an actuating member on one of said housing members engaging said pump means to actuate the same upon the shifting of said housing members from the rest positions thereof to the actuating positions thereof, the housing member other than said wall-mountable housing member presenting a large area for contact by a user for shifting said housing members from the rest positions thereof to the actuating positions thereof.

4,214,677

SPRAY DISPENSING CONTAINER

Daniel Bauer, Le Raincy, and Gerard Braque, Mitry-le-Neuf, both of France, assignors to L'Oreal, Paris, France

Filed Jul. 12, 1978, Ser. No. 923,990
Claims priority, application France, Jul. 12, 1977, 77 21443
Int. Cl.[2] B67D *5/54*
U.S. Cl. 222—145 **9 Claims**



1. A dispensing container for dispensing a liquid product, comprising a reciprocating product pump having an ejection duct formed in a reciprocable element of the pump, means defining a dispensing duct communicating with the ejection duct and terminating at a spray nozzle, manually operable compression means for compressing air and mounted on said reciprocable element of the product pump, conduit means for connecting said compression means to said dispensing duct upstream of said spray nozzle, said compression means including a cylinder and a piston and comprising means for moving the reciprocable element of the product pump in response to manual movement of the piston with respect to the cylinder to both dispense the product and inject compressed air into the product, said compression means including a discharge valve, and means to prevent said discharge valve from opening until the air pressure within said cylinder attains a predetermined limiting value, the reciprocating product pump being of the type having a precompression valve for dispensing a dose of the liquid product only after the pressure of this dose attains a predetermined limiting value, and wherein said means to prevent said discharge valve for the compressed air from opening is set so that its opening is affected substantially simultaneously with the opening of said precompression valve.

4,214,678

CONDIMENT DISPENSER WITH HOLE-CLEARING MEANS

Peter Patrinos, 1525 Fourth Ave., Altoona, Pa. 16602

Filed Dec. 1, 1978, Ser. No. 965,530
Int. Cl.[2] B67D *1/08*
U.S. Cl. 222—149 **7 Claims**

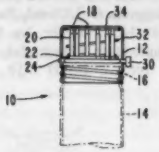
1. A condiment dispenser comprising:

a container for holding the condiment to be dispensed, said container having a plurality of dispensing openings in the top surface thereof, and a removable cap portion, said dispensing openings being located in said cap portion;

prong means mounted in said cap portion including an individual prong corresponding to, and aligned for insertion into, each of said openings;

camming bar means rotatably mounted in said cap portion for forcing said prongs into said dispensing openings to

clear the dispensing openings upon rotation of said camming bar means; and



means mounted in said cap portion for biasing said prong means away from said dispensing openings and against said camming bar means.

4,214,679

MEASURED QUANTITY DISPENSER

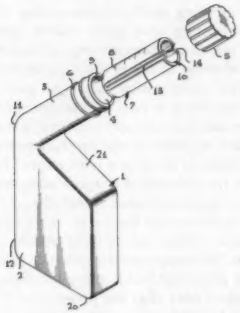
Chi-Man Whang, 134-33 Kochok-dong, Youngdungpo-ku, Seoul, Rep. of Korea

Filed May 8, 1978, Ser. No. 903,519

Claims priority, application Rep. of Korea, May 31, 1977, 3518; Jun. 7, 1977, 3649; Jun. 9, 1977, 3707

Int. Cl.[2] G01F *11/26*

U.S. Cl. 222—158 **10 Claims**



1. A measured volume liquid dispenser comprising:

a container having a body portion with a bottom for supporting the container on a surface in a vertical position and an elongated neck disposed opposite the bottom and extending at an acute angle relative to the vertical direction from the body portion to a container mouth, the container being adapted to receive and retain a cup within the neck;

the cup being removably disposed within the neck with a close fitting, mating relationship between the cup and the neck, with a closed end of the cup adjacent the container body portion and with an open end of the cup adjacent the container mouth, the neck and cup being shaped to provide a pair of grooves defined between the cup and the neck and extending along the neck between the open and closed ends of the cup in opposed relationship to provide communication therebetween from the body portion to the open end of the cup; and

a removable cap adapted to engage the neck of the container and sealingly close the mouth thereof.

4,214,680

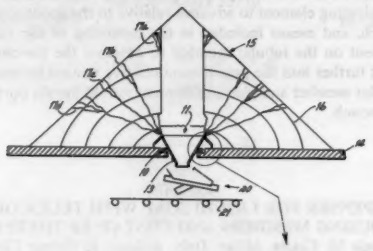
DRAWDOWN HOPPER ISOLATION SYSTEM HAVING ISOLATORS WITH FABRIC LAYS

William M. Wetherton, Louisville, Ky., assignor to Carman Industries, Inc., Jeffersonville, Ind.

Filed Sep. 25, 1978, Ser. No. 945,470

Int. Cl.[2] B65G *3/12*

U.S. Cl. 222—161 **10 Claims**



1. A drawdown hopper isolation system comprising

a drawdown hopper positioned in spaced relation from a support surface, said drawdown hopper including a vibration source adapted to induce vibration into said hopper, and

an isolation system having a plurality of isolators supporting said hopper in spaced relation from said support surface, said isolators being positioned between said hopper and said support surface so as to be subjected to a compressive loading from said hopper, each of said isolators comprising a rubber block having a series of generally parallel woven fabric lays axially spaced one from another within said block, the warp and weft directions of each of said fabric lays being rotationally oriented in generally random rotational orientation relative to the axis of said block, and relative to the warp and weft directions of the other woven fabric lays, so as to insure relatively even lateral deflection of said isolator in response to vibration of said hopper.

4,214,681

APPLICATING DEVICE

Abraham I. Levine, 26 Wilson Ave., Rowayton, Conn. 06853

Filed Sep. 22, 1978, Ser. No. 944,791

Int. Cl.[2] B05B *11/00*; F04B *43/12*

U.S. Cl. 222—214 **7 Claims**

1. An applicating device for applying a fluent coating material to a surface to be coated by said material comprising:

a conduit means having one end adapted to be disposed in communication with a supply of the coating material to be applied to a surface,

a dispensing means connected to the other end of said conduit,

said dispensing means including means to convey predetermined amounts of said coating material through said conduit from a supply source to said other end of said conduit whereby the material is dispensed onto a surface,

said dispensing means including a housing having a curvilinear inner wall surface,

a rotor rotatably journalled in said housing,

a plurality of radially extending arms connected to said rotor,

said arms being circumferentially spaced about said rotor,

pressure rollers rotatably journalled to the extended ends of said arms,

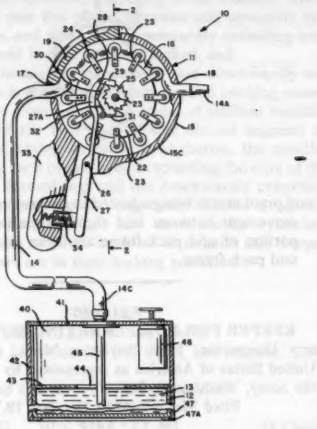
said rollers being spaced from said inner wall surface of said housing,

said housing having an inlet opening and an outlet opening,

said conduit means being threaded through said inlet opening and outlet opening whereby said other end of said

conduit means extends through said outlet opening, and the portion of said conduit means extending between said inlet and outlet openings being disposed contiguous the curvilinear inner wall of said housing and between said inner wall and adjacent rollers,

and an actuating means operatively associated with said rotor for effecting the drive of said rotor so that said rollers effect a squeezing action on said conduit means when said rotor is activated to dispense said coating material from the outlet end of said conduit means,



said actuating means including a unidirectional drive,

wherein said drive comprises a ratchet connected to said rotor,

an operating handle pivoted to said housing,

a pawl pivoted to the end of said lever opposite said ratchet,

and spring means biasing said pawl into operative engagement with said ratchet whereby said rotor is incrementally driven as said lever is actuated.

4,214,682

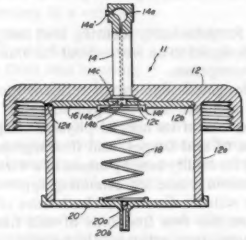
NON-LEAKING PUMP SPRAY VALVE

Thomas A. Thomas, Jr., 4100 SW. 58th Ter., Davie, Fla. 33314

Filed Jun. 23, 1977, Ser. No. 809,081

Int. Cl.[2] G01F *11/02*

U.S. Cl. 222—321 **4 Claims**



1. A non-leaking pump spray device comprising in combination:

(a) A cap portion (12) cooperable with the mouth of a container and having a central orifice with a lower wider portion (12*c*);

(b) a fluid reservoir (12*a*) depending from said cap portion (12) and having an upper lateral groove (12*b*) in its wall and an air orifice (12*d*) registerable with said groove;

(c) a pump member (14) extending through said cap portion (12) and into said reservoir (12*a*) and comprising a central conduit, an upper outer orifice (14*a'*), a lower lateral extension (14*c*) registerable with said lower wider portion (12*c*), a lower central extension (14*d*) having an orifice (14*b*) connecting with said central conduit and a lower terminal lateral extension (14*f*);

(d) a flexible sealing disc (16) wider than the inner diameter of reservoir (12*a*), registerable with said groove (12*b*) so as to block orifice (12*d*) and slidably movable on extension (14*d*) of pump member (14);

(e) spring means (18) between the bottom wall (20) of said reservoir (12*a*) and said lower terminal extension (14*f*) of said pump member (14) normally urging disc (16) upward;

(f) a lower opening (20*b*) in said reservoir;

(g) valve means (20*a*) in said lower opening (20*b*); said device being so constructed that in normal undepressed condition, said sealing disc blocks said air orifice (12*d*) and said inlet orifice (14*b*) from communication with the interior of said reservoir (12*a*) but when said pump member is depressed is carries said sealing disc to unblock said air orifice (12*d*) and said inlet orifice (14*b*).

4,214,683

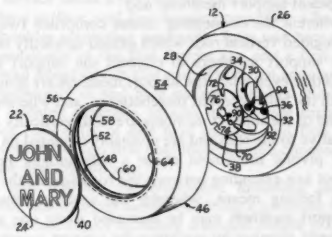
ILLUMINATED WHEEL COVER

Jack D. Wills, and Frank R. Clarkson, both of Peoria, Ill., assignors to Tale-Lite Systems, Inc., Peoria, Ill.

Continuation of Ser. No. 856,311, Dec. 1, 1977, abandoned. This application Nov. 14, 1978, Ser. No. 960,569

Int. Cl.[2] B62D *43/02*

U.S. Cl. 224—42.2 **3 Claims**



1. A cover (20) for a spare (12) mounted on the exterior of an associated vehicle (10), said spare (12) including a tire (26) mounted on a wheel (28), said vehicle (10) having a light source (38) mounted adjacent the center of wheel (28), comprising:

a flexible cover (46) including a circumferential portion (54) and opposed side wall portions (56,58), said cover (46) mounted on and supported by said tire (26) and being of a construction sufficient for covering said tire (26) and exposing said wheel (28) and said light source (38);

one of said sidewalls (56) terminating at side-by-side flaps (50,52) defining an opening (64) exposing said wheel (28) and said light source (38);

a first one of said flaps (52) being adjacent said tire (26) and a second one of said flaps (50) being adjacent said first flap (52);

a resilient bead (66) in said second flap (50), said bead (66) being of a construction sufficient for radially exapnding and contracting said opening (64); and

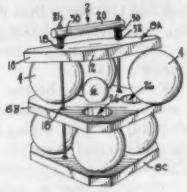
a light penetrable portion (22) covering said opening (64), said light penetrable portion having a peripheral edge (40) mounted between said flaps (50,52), said bead (66) being radially expandable for permitting edge (40) to be mounted in and removed from between said flaps (50,52), and said bead (66) being radially contractable for retaining edge (40) between said flaps (50,52).

4,214,684

BALL HOLDER

Dennis A. Galowitz, 1020 S. Fifth St., Stillwater, Minn. 55082

Filed Nov. 6, 1978, Ser. No. 957,792
Int. Cl.[2] B65D *61/00*
U.S. Cl. 224—45 L **14 Claims**



1. An apparatus for holding and transporting a plurality of balls or similar objects, which comprises:

(a) a plurality of support members;

(b) means for operatively connecting the support members together for movement as a unit with the support members being stacked on top of one another;

(c) wherein each support member has means for receiving one end of at least one ball, and wherein the ball receiving means on adjacent ones of the support members are aligned with one another such that the balls can be received in the ball receiving means in a vertical array when the adjacent support members are spaced apart;

(d) means for continuously forcing the support members towards one another to firmly retain the balls between the adjacent support members; and

(e) wherein the connecting means comprises two spaced, elongated vertical rods which extend upwardly relative to the support members to connect the support members together even when the support members are spaced apart with the balls received therebetween, and wherein at least some of the support members are both vertically movable relative to the rods and are pivotably mounted on the rods for pivotal movement about a substantially horizontal pivot axis extending between the rods against the force of the forcing means, whereby the spacing between the support members may be increased along one side of a support member by pivotting the support member about the pivot axis to allow the balls to be placed in or removed from the ball receiving means.

4,214,685

BACKPACK LOAD CARRYING SYSTEM FOR HIKERS

Murray J. Pletz, Mukilteo, Wash., assignor to K-2 Corporation, Vashon, Wash.

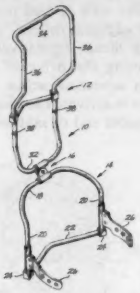
Filed Jul. 27, 1977, Ser. No. 819,477
Int. Cl.[2] A45F *3/10*
U.S. Cl. 224—211 **32 Claims**

1. An improved load carrying pack frame for hiking comprising:

a hip portion forming the lower portion of the pack frame adapted to be connected to a wearer's hips;

a shoulder portion forming the upper portion of the pack frame adapted to be connected to a wearer's shoulders;

pivot means securely interconnecting with said hip portion and said shoulder portion at a point above said wearer's hips and below said wearer's shoulders to simultaneously interconnect said hip portion and said shoulder portion and permit said hip portion and said shoulder portion to pivot laterally with respect to each other about said pivot means without generating reactive countermovements responsive to the relative movement of said wearer's hips and shoulders such that the load carried by said hip portion dynamically follows the movement of the wearer's hips and such that the load carried by said shoulder portion dynamically follows the movement of the wearer's shoulders;



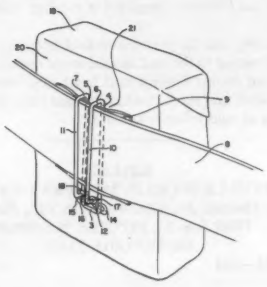
said pivot means being adapted to prevent relative rotational movement between said shoulder portion and said hip portion of said pack frame about an axis longitudinal of said pack frame.

4,214,686

KEEPER FOR LOAD CARRYING EQUIPMENT

Harry Dostourian, West Boylston, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 12, 1979, Ser. No. 19,791
Int. Cl.[2] A45F *5/02*
U.S. Cl. 224—252 **3 Claims**



1. A keeper for detachably securing load carrying means to a service belt designed to be worn about the waist of a military person which comprises:

(a) a first elongated segment of resilient metallic wire of sufficient diameter and strength to resist being permanently bent out of its normal physical shape during the normal use of said keeper, said first segment of metallic wire being forcefully bent by means of a wire-bending tool to form therein a base leg extending approximately equidistantly a suitable distance on both sides of a point equidistant from the two free ends of said first segment of metallic wire, two substantially parallel, spaced apart, upwardly extending arms perpendicular to said base leg, two substantially parallel spaced apart loops to fit over the top of said service belt, said loops being formed as continuations of said upwardly extending arms, two substantially parallel, spaced apart, downwardly extending arms formed as continuations of said two spaced apart loops, each of said downwardly extending arms having a horizontal leg formed therein, said horizontal legs being substantially parallel to each other and spaced equidistantly above said base leg, each of said horizontal legs forming

an offset of the lower portion of one of said downwardly extending arms extending generally in the direction of said upwardly extending arms, the lower portions of said downwardly extending arms being bent to form an ear at each of the two ends of said first elongated segment of metallic wire, each of said ears being located at a height above said base leg and being of a diameter and oriented in a direction such as to permit it to pass between said two upwardly extending arms when said downwardly extending arm on which it is formed is flexed inwardly with respect to said upwardly extending arms, whereby when each of said ears has passed between said upwardly extending arms, and when said downwardly extending arm is released, said keeper becomes locked; and

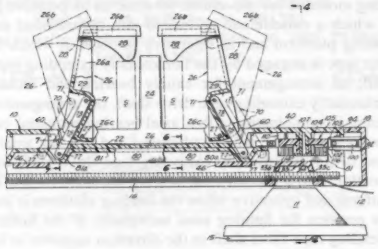
(b) a latching means for maintaining said downwardly extending arms in their locked positions, said latching means being formed from a second segment of resilient metallic wire, each of the two ends of said second segment of metallic wire having an eye formed therein, the metallic wire forming each of said eyes surrounding the wire of the horizontally formed legs and the downwardly extending arms, said latching means being freely slidable along said horizontally formed legs, said downwardly extending arms, and said loops to latch or to unlatch said keeper when said ears are in their locking positions.

4,214,687

VEHICLE TOP SKI RACK

Calvin J. Covell, 1111 Corning St., #305, Los Angeles, Calif. 90035

Filed Feb. 12, 1979, Ser. No. 11,609
Int. Cl.[2] B60R 9/00
U.S. Cl. 224—323 **11 Claims**



1. A rack for securing skis to a vehicle comprising:

(a) an elongated housing having adjustable means for securing the housing to a vehicle;

(b) at least one pair of stationary columns spaced transversely of said housing and secured to and extending upwardly from said housing;

(c) at least one pair of opposed clamps each pivotally mounted for movement about horizontal axes oriented transversely of said housing and moveable between a clamping position with said opposed clamps in proximity to said columns and a release position with said clamps located away from said columns on opposite sides thereof; and

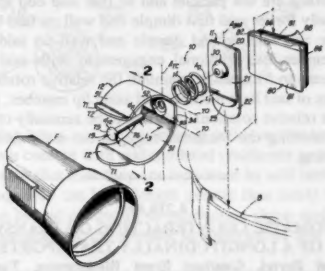
(d) actuating means for moving said clamps between said clamping position and said release position, said actuating means comprising a pair of elongated parallel slides mounted for movement longitudinally in said housing, a pair of links respectively each having a first pivotal connection to a respective one said clamps and a second pivotal connection to a respective one of said slides whereby longitudinal movement of said slides causes said links to pivotally move said clamps between their clamping and release positions, and a rotatable drive means mounted in said housing and having connecting means thereon engageable with connecting means on each of said slides, and means for rotating said drive means to cause said parallel slides to move in opposite directions.

4,214,688

TOOL MOUNTING ASSEMBLY

Groves L. Griffin, Jr., 1370 McIntosh Rd., Douglasville, Ga. 30134

Filed Oct. 19, 1978, Ser. No. 952,696
Int. Cl.[3] A45F 5/00
U.S. Cl. 224—197 **8 Claims**



1. A tool mounting assembly for removably mounting and positioning a tool such as a flashlight comprising:

a base member for mounting said assembly, said base member defining a generally flat base surface thereon and including a first dimple projecting outwardly from said base surface about a first dimple axis generally normal to said base surface, said first dimple comprising a first annular shoulder projecting outwardly from said base surface concentrically of the first dimple axis and a first dimple end wall integral with that end of said first annular shoulder outwardly of said base surface, said first dimple end wall oriented generally parallel to said base surface and spaced outwardly of said base surface, said first dimple end wall defining a first hole therethrough concentrically of said first dimple axis;

a tool clip member for removably mounting said tool therein, said tool clip member defining a generally flat clip surface thereon and including a second dimple projecting outwardly from said clip surface about a second dimple axis generally normal to said clip surface, said second dimple comprising a second annular shoulder projecting outwardly from said clip surface concentrically of the second dimple axis and a second dimple end wall integral with that end of said second annular shoulder outwardly of said clip surface, said second dimple end wall oriented generally parallel to said clip surface and spaced outwardly of said clip surface, said second dimple end wall defining a second hole therethrough concentrically of the second dimple axis, said base member and said tool clip member oriented so that said first and second dimples face each other with said first and second holes coaxially aligned;

a compression coil spring having a spring axis and opposed ends oriented normal to said spring axis positioned between said base member and said tool clip member so that one end of said spring fits over said first dimple and engages said base surface and the other end of said spring fits over said second dimple and engages said clip surface, said first annular shoulder on said first dimple maintaining that end of said spring engaging said base surface concentrically of first dimple axis and said second annular shoulder on said second dimple maintaining that end of said spring engaging said clip surface concentrically of the second dimple axis; and

fastening means of a fixed length rotatably extending through said first and second holes in said dimples and through said spring, said fastening means engaging said

first and second dimple end walls to limit the movement of said base member and said clip member away from each other and keep said coil spring in compression with said first dimple spaced from said second dimple so that said coil spring resiliently forces said base member and said tool clip member toward a position with the first dimple axis coaxial with the second dimple axis and with said base surface parallel to said clip surface to positively locate said base member with respect to said tool clip member yet allows said base member to be moved with respect to said tool clip member so that said base surface and said clip surface are not parallel and so that said coil spring resiliently forces said first dimple end wall on said base member and said second dimple end wall on said tool clip member into frictional engagement with said fastening means to frictionally maintain the relative rotational position of said base member and said clip member, yet allows the relative rotational position to be manually changed by overriding the frictional engagement maintained by said spring.

4,214,689

AUTOMATIC COUNTERACTING OF TRANSVERSE SHIFT OF A LONGITUDINALLY TRANSPORTED STRIP

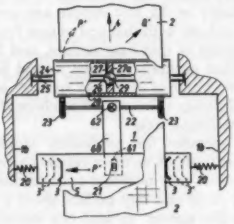
Siegfried Bartel, Gauting; Ernst Biedermann, Taufkirchen; Heinz Rapp, Munich, and Martin Müller, Unterhaching, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Jul. 24, 1978, Ser. No. 927,521

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734325

Int. Cl.[2] B65H *25/26*

U.S. Cl. 226—21 **10 Claims**



1. In an apparatus comprising means longitudinally transporting an elongated strip along a predetermined transport path, an arrangement serving to automatically counteract the development of improper transverse shift in the transported strip, the arrangement comprising, in combination, sensing means operative for sensing transverse shift in the longitudinally transported strip; and correcting means automatically operative in response to the detection of shift by the sensing means for exerting upon the major surface of the transported strip a shift-correcting force which transversely displaces the transported strip in a direction opposite to the detected transverse shift, the sensing means comprising edge-sensing means operative for sensing the position of a lateral edge of the transported strip, the correcting means comprising a pair of transport rollers located at opposite major surfaces of the transported strip and pressing the transported strip between them, means mounting the transport rollers such that the rotation axes of the rollers are normally parallel but including means mounting one of the transport rollers for swinging movement about a swing axis generally perpendicular to the rotation axis of the other transport roller, and connecting means connecting the swingable transport roller to the edge-sensing means and automatically swinging the swingable transport roller in dependence upon the transverse shift detected by the edge-sensing means in a direction causing the swingable transport roller to exert said shift-correcting force upon a major surface of the transported strip.

4,214,690

AXIAL LOCATING OF HORIZONTALLY EXTENDING TAPE DRIVE SHAFT IN CASSETTE MACHINE

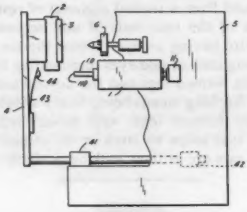
Georg Papst, St. Georgen; Volker Schlicker, Radevormwald, and Rolf Müller, St. Georgen, all of Fed. Rep. of Germany, assignors to Papst Motoren KG, St. Georgen, Fed. Rep. of Germany

Filed Oct. 27, 1978, Ser. No. 955,639

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1977, 2748805

Int. Cl.[2] B65H *17/18*

U.S. Cl. 226—49 **17 Claims**



1. In a magnetic-tape cassette machine of the type comprising a machine housing, a tape transport mechanism including a horizontally extending tape drive shaft, and a loading platform accommodating a cassette and designed to hold the cassette upright during tape transport, the cassette loading platform being mounted for movement between an inoperative position in which a cassette can be loaded into or unloaded from the loading platform and an operative position in which the cassette tape is engaged by the horizontally extending tape drive shaft, an arrangement for axially bearing and locating the horizontally extending tape drive shaft, the arrangement comprising in combination a first axial bearing mounted on a stationary part of the machine housing and limiting axial movement of the horizontally extending tape drive shaft in a first direction; and a second axial bearing mounted on the loading platform and operative when the loading platform is in operative position for limiting axial movement of the horizontally extending tape drive shaft in the direction opposite to the first direction.

4,214,691

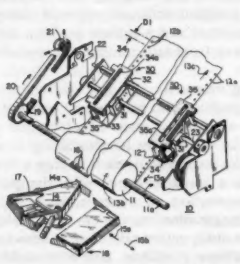
PIN-FEED ASSEMBLY

Frederik T. van Namen, Londonderry, N.H., assignor to Centronics Data Computer Corp., Hudson, N.H.

Filed Dec. 15, 1978, Ser. No. 969,850

Int. Cl.[2] B03B *1/30*; B65H *12/38*

U.S. Cl. 226—74 **26 Claims**



1. A pin feed tractor assembly for advancing a web having

equispaced perforations extending along the direction of movement of the web, said assembly comprising:

a frame;

first and second sprockets rotatably mounted upon said frame at spaced intervals;

each sprocket having equispaced radially aligned teeth;

a timing belt entrained about said sprockets;

said belt having integrally joined alternating flexible and rigid belt portions, said flexible portions being thinner than said rigid portions and forming therewith notches along the interior surface of the belt, each of said notches being adapted to receive a tooth of a sprocket with sufficient clearance therebetween such that said timing belt bends at said notches as said timing belt moves about the sprockets;

the exterior surface of said timing belt having projecting pins for insertion into associated perforations in said web to advance said web; and

said projecting pins are arranged at selected positions intermediate said notches to prevent the web from being stretched or torn by said projecting pins as the timing belt moves about one of t sprockets.

4,214,692

BUTT-WELDING APPARATUS FOR ASSEMBLING AND LAYING PIPE STRINGS IN DEEP WATER

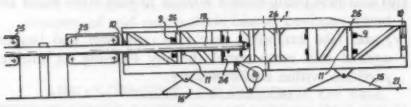
Roger J. Le Garfe, Reze; Edmond Pignal, Thonon, and Charles J. Magloire, Chatenay-Malabry, all of France, assignors to Compagnie Francaise des Petroles; Societe Nationale Elf Aquitaine (Production), both of Paris; Ateliers et Chantiers de Bretagne—A.C.B., Nantes; Etudes Petrolieres Marines; Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines (DORIS), both of Paris and Compagnie Maritime d'Expertises, Marseille, all of, France

Filed Mar. 30, 1978, Ser. No. 891,782

Claims priority, application France, Mar. 30, 1977, 77 09434

Int. Cl.[2] B23K *19/00*

U.S. Cl. 228—44.1 R **6 Claims**



1. Apparatus for butt-welding two pipe ends comprising means for compensating for shrinkage caused by the welding operation and by the preheating of the welded ends, the compensating means being provided on said apparatus near one pipe end to urge one pipe end against the other pipe end, said compensating means comprising reciprocating actuators acting between the frame of the apparatus and a first jaw secured adjacent one of the pipe ends, a second jaw secured adjacent the other pipe end and acting on strain gauges bearing on said frame of said apparatus, said first and second jaw comprising two half-shells together forming a nut which is internally screw-threaded for engaging screw threading on the pipe ends.

4,214,693

METHOD OF MAKING WIRELINE APPARATUS FOR USE IN EARTH BOREHOLES

William D. Smith, 4217 Sarita Dr., Fort Worth, Tex. 76109

Division of Ser. No. 773,390, Mar. 2, 1977, Pat. No. 4,137,762.

This application May 30, 1978, Ser. No. 910,844

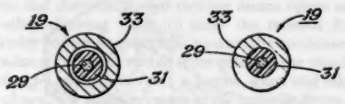
Int. Cl.[2] B21D *39/04*

U.S. Cl. 228—148 **20 Claims**

4. The method of making a wireline suitable for use with wireline apparatus for use in earth boreholes and wherein a wireline is utilized to suspend a downhole tool in a borehole from aboveground cable drum and winch means and to transmit electrical signals between said tool and aboveground equipment, said method comprising the steps of:

a. making a continuous piece of smooth walled metal tubing of a material the tensile strength of which can be raised by cold working and having an inside diameter such that a predetermined number of insulated conductors can be inserted into said tubing;

b. inserting while making said tubing said predetermined number of insulated conductors within said tubing;



c. swaging by means of hammering action said tubing into intimate contact with said insulated conductor or conductors, such that it or they are supported by said tubing and consequently can be of length greater than could be supported by said conductor or conductors alone; said tubing after swaging having a tensile strength above that of mild steel.

5. The method of claim 4 wherein said tubing is made from a strip of material that is formed into generally tubular shape as said conductors are inserted, then closed to tubular shape and the seam welded, all prior to the swaging step.

4,214,694

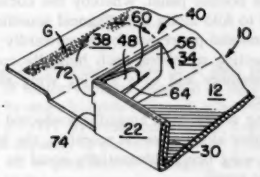
BOX COVER, BLANK THEREFOR

Glenn E. Struble, Oxford, Ohio, assignor to Diamond International Corporation, New York, N.Y.

Filed Oct. 25, 1978, Ser. No. 954,687

Int. Cl.[2] B65D *5/22, 5/24*

U.S. Cl. 229—31 FS **13 Claims**

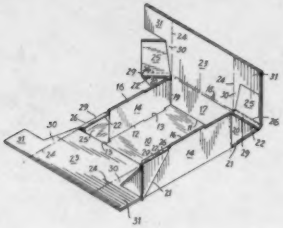


1. A box cover or like member of pasteboard or like material comprising a generally rectangular top panel, fold over side walls at opposite sides thereof, and fold over end walls at each end thereof, each of said side and end walls having an outer panel integral with and hingedly associated with said top panel and an inner panel integral with and extending along side a respective one of said outer panels, each of said outer side wall panels having a corner assembly tab at opposite ends thereof, each of said inner side wall panels having a floating corner reinforcement tab at opposite ends thereof, each of said corner assembly tabs including means allowing the floating corner reinforcement tab adjacent thereto and associated therewith to be nestled thereagainst and to extend generally coplanar with a substantial portion thereof.

4,214,695
ONE-PIECE REINFORCED CONTAINER

Keith A. Cooper, Elkridge, Md., assignor to International Paper Company, New York, N.Y.

Filed Mar. 26, 1979, Ser. No. 23,861
Int. Cl.[3] B65D 5/22, 5/46
U.S. Cl. 229—36 7 Claims



1. A one-piece cut and scored paperboard blank for making a one-piece reinforced container comprising: a generally rectangular bottom panel defined by a pair of first longitudinal scorelines and a pair of first lateral scorelines;

a pair of generally rectangular side panels, each hingedly connected to the bottom panel along one of the first longitudinal scorelines, each of the side panels being defined by one of the first longitudinal scorelines, and by a pair of second lateral scorelines which are offset from and meet said pair of first longitudinal scorelines slightly inwardly from their ends;

a pair of generally rectangular end panels, each hingedly connected to the bottom panel along one of the first lateral scorelines, each of the end panels being defined by one of the first lateral scorelines, and a pair of second longitudinal scorelines;

four generally rectangular corner members hingedly connected to: (a) the side panels along the second lateral scorelines; (b) the end panels along the second longitudinal scorelines; and (c) portions of the bottom panel along the offsets of the first longitudinal scorelines, each corner member containing a diagonal, perforated scoreline beginning at the intersection of the lateral ends of the side panel with the bottom panel, whereby the corner member is adapted to fold along this diagonal scoreline as the side panels and end panels are folded upwardly;

four connecting members, each hingedly connected to a corner member and to a locking wing along a lateral scoreline;

four locking wings, each hingedly connected to a connecting member along a lateral scoreline, the length of each locking wing being substantially equal to the width of each side panel;

a pair of generally rectangular cover flaps, each hingedly connected to an end panel along a third lateral scoreline;

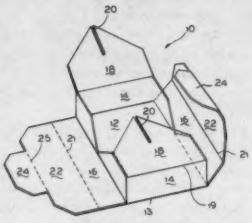
four container locking assemblies, each hingedly connected to a cover flap along a fourth longitudinal scoreline, and each cut free from a corner locking wing along a first oblique cut and a first lateral cut, so that the outermost portion of each container locking assembly is a generally rectangular tab whose length is substantially equal to the width of each side panel; and

four generally trapezoidal cut-outs, each of which communicates with an end panel along a longitudinal cut, with a container locking assembly along a second lateral cut, with a connecting member along a second oblique cut, and with a cover flap along a third oblique cut, the second and third oblique cuts being in parallel relationship.

4,214,696
CONTAINER WITH INTEGRAL PARTITION

Paul R. Barton, Nashville, and Johnnie M. Welborn, Clarksville, both of Tenn., assignors to Container Corporation of America, Chicago, Ill.

Filed Jun. 27, 1979, Ser. No. 52,413
Int. Cl.[3] B65D 5/48, 5/50, 81/00
U.S. Cl. 229—40 1 Claim



1. A container formed from a blank of paperboard, or the like, and having an integral, internal product separating partition, comprising:

(a) a main panel;

(b) pairs of first and second side panels foldably joined to the respective edges of said main panel and upstanding therefrom;

(c) closure flaps foldably attached to said side panels and including:

(i) inner closure flaps attached to the edges of each of said side panels of one of said pairs and having elongated slots formed therein;

(ii) outer closure flaps attached to the edges of each of said side panels of the other of said pairs and having tabs formed along the outer edges thereof;

(iii) said inner and outer closure flaps being folded in an overlapping relationship spaced from and substantially parallel to said main panel so as to close said container;

(iv) said tabs being folded normal to said main panel and being received in said slots;

(v) said tabs extending into said container and bearing against said main panel thereby forming an internal partition within said container.

4,214,697
LIQUID GABLE TOP CARTON WITH INTEGRAL CARRYING HANDLE

James F. Manning, Strongsville, Ohio, assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 27, 1978, Ser. No. 955,809
Int. Cl.[2] B65D 5/74, 5/46
U.S. Cl. 229—52 B 2 Claims

1. A reclosable gabled top container having a pour spout and integral handles comprising:

a generally tubular side wall formed from four hingedly connected side panels;

a bottom closure portion hingedly connected to the bottom edges of said tubular side wall; and

a gabled top closure formed from first and second opposed flexing panels, and first and second opposed handle panels, said opposed flexing panels being hingedly connected to the top edge of two opposed side panels of said tubular side wall, said flexing panels being formed from three hingedly connected generally triangular sections with an apex of each said triangular section being disposed at a common point, and with said opposed handle panels being hingedly connected to the top edge of the remaining two opposed side panels, with said flexing panels being flexed inwardly such that said handle panels are inclined inwardly whereby the top edges thereof meet along a line thereby forming a gabled configuration, there being a glue

strip provided along said line of meeting between said handle panels to seal said carton, and with each said handle panel including a pair of handle members respectively hingedly connected along the top edge thereof, said handle members being in abutting relationship and extending vertically upwardly from said gabled top configuration, said handle members being partially adhesively connected therebetween, the adhesive connection between said handle members extending from the side edges of said handle members adjacent said first flexing panel to a point intermediate the length of said handle members, whereby said gabled top may be readily opened to form a pour spout by

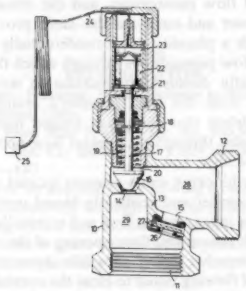
first separating the top edges of said handle panels along said glue strip, from the side edge of said handle panels adjacent said second flexing panel to a point intermediate the length thereof and thereafter outwardly flexing said second flexing panel to form the pour spout, with the portions of said handle members, adjacent said second flexing panel, which are not adhesively connected, separating to facilitate the opening of said gabled top, and wherein the adhesively connected portions of said handle members, adjacent said first flexing panel, remain sealed and in the upright vertical position to aid in pouring the contents of said carton.

4,214,698

ARRANGEMENT FOR CONTROL OF THE TEMPERATURE OF HEAT RADIATORS IN A CO-TUBE SYSTEM

Hans E. Josefsson, Trangsund, Sweden, assignor to Tour & Andersson Aktiebolag, Johanneshov, Sweden

Filed Nov. 20, 1978, Ser. No. 962,336
Claims priority, application Sweden, Nov. 21, 1977, 7713106
Int. Cl.³ G05D *23/12*
U.S. Cl. 236—42 **6 Claims**



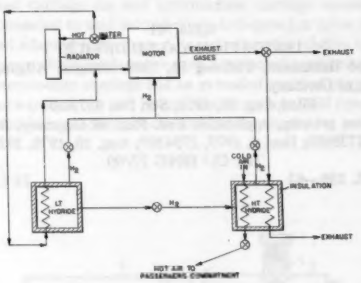
1. A heat control system for a discontinuously operated heat radiator of the co-tube type in which the steam feeder connection also acts as a return for condensed water comprising: a thermostat which is placed away from the radiator; an inlet steam valve between the steam feeder connection and the radiator; means for moving said steam valve to an open or a closed position in response to an indication from said thermostat; and a condensed water outlet valve between the steam feeder connection and the radiator, said outlet valve being of the return blocking type in which said outlet valve is normally biased closed by its own weight and the weight of any condensed water in the radiator; such that in response to an indication from said thermostat, said moving means opens said inlet steam valve allowing steam to enter the radiator from the steam feeder connection and heat a room, the condensed water in the radiator being prevented from entering the steam feeder connection by said outlet valve whereby when said inlet valve is later closed, the steam pressure in the radiator drops and the steam pressure in the steam feeder connection pushes said outlet valve open allowing the condensed water in the radiator to drain from the radiator back through the steam feeder connection.

4,214,699

PARKING HEATER AND METHOD USING HYDRIDES IN MOTOR VEHICLES POWERED BY HYDROGEN

Helmut Buchner, Wendlingen, and Helmut Säufferer, Esslingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Apr. 10, 1978, Ser. No. 894,812
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1977, 2715990
Int. Cl.³ B60H *1/02*
U.S. Cl. 237—12.3 C **15 Claims**



1. A method for parking heating of at least the passenger compartment of motor vehicles operated at least partially on hydrogen and having a hydride reservoir, wherein the hydride reservoir is a LT/HT hydride combination, comprising supplying the heat capacity of the HT reservoir, present after the engine is shut off or produced by charging with hydrogen, at least partially to the passenger compartment.

4,214,700

METHOD AND APPARATUS FOR MAKING SNOW FOR SKI SLOPES AND THE LIKE

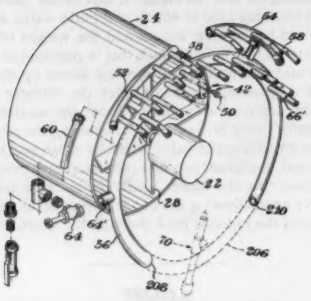
James B. Vanderkelen, Midland, and William E. Riskey, Whitmore Lake, both of Mich., assignors to Snow Machines, Inc., Midland, Mich.

Filed Oct. 27, 1978, Ser. No. 955,402
Int. Cl.² F25C *3/04*
U.S. Cl. 239—2 S **9 Claims**

1. In a snowmaking process which includes an air-water snowmaking seeder gun in combination with means for generating a substantially unidirectional high-volume air stream at substantially atmospheric pressure into which bulk water is directed from an array of bulk water nozzles, said air-water

snowmaking gun including a water source, a compressed air source, a mixing chamber and an exit orifice, the improvement which comprises the steps of:

(1) passing a pressurized flow of incoming water in a manner to surround substantially all of said mixing chamber and at least a portion of said exit orifice,



(2) supplying water to said gun by admitting a minor portion of said flow of incoming water to said gun, and

(3) thereafter flowing at least a major portion of said incoming water to said bulk water nozzles.

4,214,701

IRRIGATION VALVE DEVICE

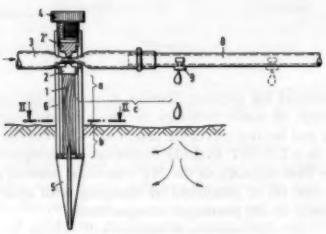
Gerhard Beckmann, Tödiweg 51, 7988 Wangen, Allgäu, Fed. Rep. of Germany

Filed Aug. 28, 1978, Ser. No. 937,600

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1977, 2739650; Dec. 6, 1977, 2754307; Aug. 10, 1978, 2835093

Int. Cl.² H01G *27/00*

U.S. Cl. 239—63 **31 Claims**



1. An irrigation valve device comprising:

a valve;

a swellable member operatively associated with the valve which controls the valve is response to its moisture content and is subjected to water passing through the valve, said valve further comprising:

an insert tip extending below said swellable member for insertion into ground, at least a major portion of the surface of said swellable member being exposed above ground and the remaining portion of the surface of said swellable member directly contacting the ground in accordance with depth of insertion of the inert tip into the ground.

4,214,702

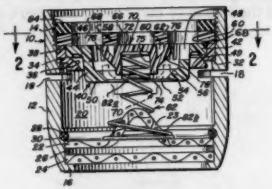
SELF-CLEANING AERATOR

Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502

Filed Jan. 17, 1979, Ser. No. 4,061

Int. Cl.² E03C *1/08*

U.S. Cl. 239—110 **14 Claims**



1. In an aerator that includes: an axially elongated tubular casing having means through which air is ingested to the interior of the casing to be mixed with fragmented liquid jets; screen means within and adjacent the downstream end of said casing through which aerated liquid is discharged; and plastic jet-defining and jet-fragmenting means, within the casing and upstream of said screen means, through which liquid to be aerated is forced under pressure consisting of:

(1) an annular guide ring with a downstream annular impingement surface defined thereon and having an upstream, annular, support edge disposed in a plane; and

(2) a cup-shaped plug member having an upper annular support flange slidingly telescoped into said guide ring and an upright side wall projecting downstream from the inner edge of said annular peripheral flange, the upstream side of said support flange lying in the same plane with the annular support edge of the guide ring, the upright side wall being provided therein with a series of axially elongated slots that extend downstream from the upstream side of said support flange and operates to provide the liquid jets required to effect aeration of the liquid;

the improvement of self-cleaning character for said aerator comprising, in combination:

(a) said plug member being formed as an annulus with a relatively large central flow opening through the downstream transverse wall of said cup-shaped member;

(b) a shape-retaining washer supported at least on the annular support edge of the guide ring; said washer having radially spaced outer and inner concentric annular lands interconnected by a plurality of radial lands, the inner annular land bounding and defining a central flow passageway, and the annulus between said outer and inner annular lands providing therethrough a plurality of circumferentially spaced primary flow passageways through which flow of liquid is initially directed downstream to scrub and dislodge, from the plug member's axially elongated slots, debris that may have lodged therein, and to flush same through the central flow opening of said plug member; and

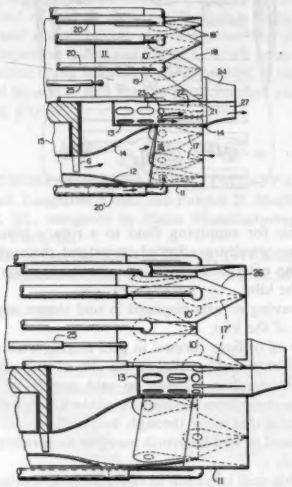
(c) a flow-blocking valve member located downstream of the washer and resiliently biased upstream to engage the inner circular land and to initially block flow through the central flow opening of the washer, said valve member being movable downstream under force of flowing liquid to close the central flow opening of the plug member after dislodged debris has passed therethrough, and to restore normal aerating operation of the aerator.

4,214,703

AIRCRAFT ENGINE NOZZLE

Norman E. Sorensen, Saratoga, and Eldon A. Latham, Sunnyvale, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 23, 1979, Ser. No. 23,436
Int. Cl.[3] B64D *33/04*
U.S. Cl. 239—127.3 5 Claims



1. A variable area exit nozzle arrangement for an aircraft engine having a substantially reduced length and weight which comprises a plurality of longitudinally movable radial vanes and a plurality of fixed radial vanes, the movable radial vanes being alternately disposed with respect to the fixed radial vanes, and means for displacing the movable radial vanes along the longitudinal axis of the engine relative to said fixed radial vanes, said radial vanes radially extending across the main exhaust flow of the engine and each having a taper in the downstream direction whereby the exit nozzle area is varied when the movable radial vanes are displaced with respect to the fixed radial vanes, said nozzle including a translating outer sleeve and a translating inner sleeve connected by said movable radial vanes and a fixed main outer body and fixed main inner body connected by said fixed radial vanes, said translating outer and inner sleeves and movable radial vanes moving as a unit relative to said fixed outer and inner bodies and said fixed radial vanes.

4,214,704

RECIPROCATOR

Masashi Nagai, Gahanna, Ohio, assignor to Rimrock Corporation, Columbus, Ohio

Filed May 8, 1978, Ser. No. 903,959
Int. Cl.[2] B05B *3/18;* F16N *25/00*
U.S. Cl. 239—187 7 Claims

1. Apparatus for automatically moving a reciprocating operating head successively through variable-speed, variable-function operating cycles that include linear extension and retraction to and from a space within which predetermined operations are to be sequentially performed, comprising:

a fixed frame,

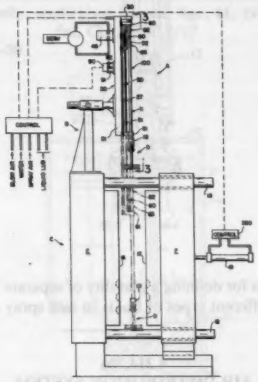
first chain-and-sprocket drive means on said frame,

an intermediate carriage on said fixed frame operatively connected to said first chain-and-sprocket drive means and adapted to be moved linearly thereby relative to said frame between a retracted position on said frame and an extended position projecting outwardly from said frame,

second chain-and-sprocket drive means on said intermediate carriage,

rack means on said frame,

a pinion mounted on said intermediate carriage for operative engagement with said rack means, said pinion being operatively connected to said second chain-and-sprocket drive



means for driving said second chain-and-sprocket drive means in response to movement of said intermediate carriage relative to said frame, and

a head carriage on said intermediate carriage operatively connected to said second chain-and-sprocket drive means and adapted to be moved linearly thereby relative to said intermediate carriage between a retracted position on said intermediate carriage and an extended position projecting outwardly from said intermediate carriage, said operating head being mounted on said head carriage.

4,214,705

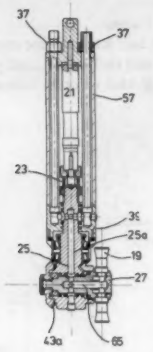
APPARATUS FOR CLEANING TANKS

Grady Watts, Vero Beach, Fla., and Michael Robinson, Malvern, England, assignors to Chemdet Sonic Systems, Inc., Port Washington, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,555
Int. Cl.[2] B05B *3/02*
U.S. Cl. 239—227 10 Claims

1. In an apparatus using high pressure fluids for cleaning tanks having an elongated cylindrical housing with an upper fluid inlet portion and a lower portion having a rotating cylindrical main vertical tube journaled for rotation in said lower portion, a bevel housing gear at the lower end of said lower portion, a nozzle assembly attached to said rotating cylindrical main vertical tube including spray nozzles at the outer end of said nozzle assembly and a bevel gear coupled to said nozzle assembly in mesh with said bevel housing gear, the improvement therein wherein said nozzle assembly includes an elongated nozzle tube disposed at right angles to said rotating cylindrical main vertical tube, said spray nozzles being at one end of said nozzle tube, said nozzle assembly bevel gear being at the other end of said nozzle tube, wherein said main tube is concentric with said housing, wherein said apparatus further

comprises means symmetric with respect to said main tube for rotating said main tube and thereby rotating said nozzle assembly, and means for defining a plurality of separate passageways for feeding different types of fluids to said spray nozzles.

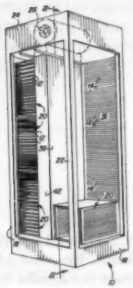


4,214,706

AIR DISTRIBUTION SYSTEM

Arthur Gee, Niagara Falls, N.Y.; Edward J. Largo, and Boris M. Plesinger, both of Phoenix, Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Dec. 20, 1978, Ser. No. 971,469
Int. Cl.[2] F23D *13/44*
U.S. Cl. 239—553.3 **15 Claims**



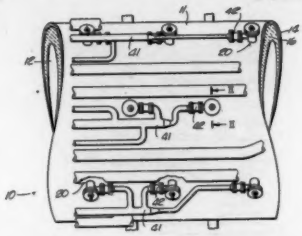
1. An improved air distribution system comprising:
planar walls forming a plenum chamber; said plenum chamber having a pair of ends, a substantially uniform cross section, and a plane of symmetry; two of said walls being substantially parallel to said plane of symmetry;
end wall means closing one end of said chamber;
planar baffle means having a surface area positioned in the plenum chamber so that it substantially lies in the plane of symmetry of the chamber, said baffle means having a large number of substantially small openings formed through it;
air metering slots of substantially uniform size formed in the two planar walls substantially parallel to the plane of symmetry of the plenum chamber for directing air flow from within the chambers in a direction substantially normal to the wall means; and
air pump means connected to the other end of the plenum chamber for forcing air into the plenum chamber.

4,214,707

TRAP-PORT FOR ROTARY KILNS

Thomas W. Flaherty, Waukesha, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jul. 23, 1979, Ser. No. 59,908
Int. Cl.[2] B05B *1/14*
U.S. Cl. 239—553.5 **7 Claims**



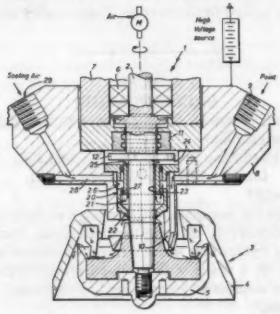
1. A nozzle for supplying fluid to a rotary kiln having a hollow sleeve structure adapted to extend through the kiln wall from the exterior thereof into communication with the interior of the kiln;
a nozzle having an axis disposed in said sleeve adjacent the interior of the kiln;
a plurality of orifices formed in said nozzle with their axes disposed in planes parallel to the axis of said nozzle;
a labyrinth member secured to said nozzle on the side thereof remote from the interior of the kiln for entrapping particulates that enter through said orifices;
means formed in said labyrinth member to permit entry of a fluid; and,
means within said labyrinth to effect turbulent mixing of the fluid admitted to said labyrinth member with particulate material that enters the labyrinth member through the orifices of said nozzle;
whereby the particulate material is carried out of the labyrinth member by the fluid through said nozzle and into the kiln.

4,214,708

ELECTROSTATIC PAINT SPRAY APPARATUS HAVING ROTARY SPRAY HEAD WITH AN AIR SEAL

Adrien Lacchia, Meylan, France, assignor to Air Industrie, Courbevoie, France

Filed Dec. 14, 1978, Ser. No. 969,315
Claims priority, application France, Dec. 20, 1977, 77 38363
Int. Cl.[2] B05B *5/04, 3/10*; F16J *15/40*
U.S. Cl. 239—703 **7 Claims**



1. In an electrostatic paint spray apparatus including a body member, a shaft mounted for rotation in bearing means in the

body member, a rotary spray-head mounted at one end of the shaft, an injection collar arranged around the shaft for distributing paint or solvent through a distributing ring protruding into said spray head; the improvement comprising an air seal adapted to be connected to a source of pressurized air and defining an air barrier against paint or solvent, said air seal including an air flow path running along the shaft axially intermediate the spray head and the bearing means and connected to barrier air venting means for venting barrier air to the surroundings before reaching the bearing means, and further comprising an annular air feed chamber connected to the upstream end of said air flow path which is defined between the shaft and a distribution sleeve operatively disposed between the injection collar and the spray head, an air inlet in the injection collar being adapted to be connected to said source of pressurized air and to said annular feed chamber via an annular distributing groove.

4,214,709

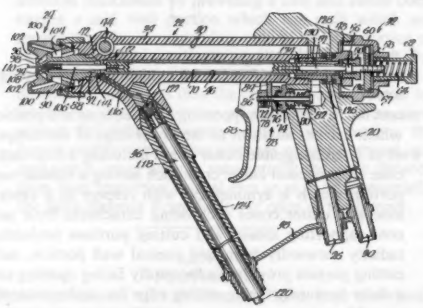
ELECTROSTATIC SPRAY COATING APPARATUS

Jon V. Scull, Longmont, Colo., and Patrick D. Shaffer, Prospect Heights, Ill., assignors to Binks Manufacturing Company, Franklin Park, Ill.

Continuation of Ser. No. 837,418, Sep. 28, 1977, abandoned. This application Mar. 8, 1979, Ser. No. 18,567

Int. Cl.[2] B05B 5/00

U.S. Cl. 239—707 **13 Claims**



1. An electrostatic spray apparatus having an electrically insulating body including a material passage terminating in an outlet orifice, and a valve for opening and closing said orifice including an electrically insulating stem extending through said material passage, the improvement comprising electrically conductive material charging means on one end of said stem extending to and through said orifice without sealing said stem from said material passage, so that upon occurrence of material in said passage said stem is exposed to and contacts the material, and a power lead connected to said conductive means for causing said conductive means to charge material passing through said passage and said orifice, said conductive means being the sole electrically charged means contacted by said material and having a low capacitance or electrical energy storage capability.

4,214,710

FROTH FLOTATION OF ZINC SULFIDE

Martin Wilson, Irvine, Calif., assignor to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Oct. 20, 1978, Ser. No. 953,140

Int. Cl.[2] B02C 17/00

U.S. Cl. 241—24 **12 Claims**

7. In the method of purification of zinc sulfide by froth flotation, the improvement which consists of carrying out said froth flotation in the presence of an effective amount of a collector for zinc sulfide and a substituted benzotrifluoride depressant, thereby depressing calcium fluoride impurities, said benzotrifluoride substituent being selected from the group consisting of hydroxy, amino and carboxylic acid.

4,214,711

EROSION DEVICE COMPRISING A HEAD WITH KNIVES AND PROCESS

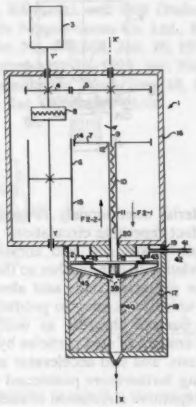
Maurice Chapuis, Sayat, and Jean-Yves Machat, Clermont-Ferrand, both of France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Mar. 30, 1979, Ser. No. 25,392

Claims priority, application France, Apr. 11, 1978, 78 10853

Int. Cl.[3] B02C 7/12

U.S. Cl. 241—30 **10 Claims**



1. An erosion device comprising at least one head and means for imparting to the head movements of rotation around an axis XX' and of translation along said axis, characterized by the fact that

(a) the head comprises knives which are blades of generally flat shape, each knife having an attack face, a trailing face and a median plane;

(b) the median plane of each knife, located at an equal distance from the attack face and the trailing face of this knife, passes through the axis XX', every two successive median planes forming with each other a constant angle α;

(c) each knife has several teeth; each tooth has a leading edge with a length "a", said leading edge being on the attack face of the knife; the leading edges of the teeth of the knife and their virtual extensions form a practically continuous common line, called line of attack; two adjacent teeth of the knife are separated by a spacing "b"; the length "a" and the spacing "b" being measured along the line of attack; and

(d) the teeth are capable of digging grooves in a material to be eroded, the groove corresponding to each tooth having a portion in common with at least one groove corresponding to a tooth of an adjacent knife.

4,214,712

MICRO-MILL-MIXER

Jacques J. B. van Hoorn, 21 Rue A. Hottat, 1050 Bruxelles, Belgium

Filed Mar. 28, 1978, Ser. No. 894,238

Claims priority, application Belgium, Apr. 28, 1977, 0177082

Int. Cl.[2] B02C 23/36

U.S. Cl. 241—46 B **5 Claims**

1. A micro-mill mixer comprising in combination:

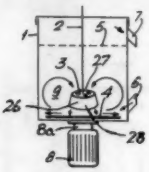
an enclosure for treating material, the material including particles carried in a fluid, the material to be accelerated in said enclosure,

an inlet means in said enclosure for introducing material to be treated into said enclosure,

an outlet means for discharging from said enclosure material for which treatment has been completed,

at least one abrasive member having at least one face provided with an abrasive coating forming hard, sharp crystalline cutting points,

at least one accelerator means for providing both centrigufal and centripetal motion to said material, said accelerator means having internal conduits ejecting the particles and fluid toward the abrasive member and means for effecting flow of material into said accelerator means, so that



ejected material continuously re-enters the accelerator means to effect repetitive circulation,

said accelerator means and said abrasive member being positioned relative to one another so that the particles and the fluid are projected onto said abrasive member and against said abrasive coating to produce intense splitting, slicing and particle shearing as well as fluid division jointly with coating of said particles by said fluid to form an intimate mix, and said accelerator means and abrasive member being furthermore positioned so as to provide a continuous repetitive circulation of said particles and fluid over said abrasive member.

4,214,713

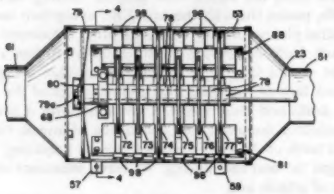
LAWN DEBRIS PULVERIZER

George H. Wright, 3901 Country Club Rd., Winston-Salem, N.C. 27104

Filed Jun. 16, 1978, Ser. No. 916,141

Int. Cl.[3] B02C *13/10*

U.S. Cl. 241—57 **5 Claims**



1. A lawn debris pulverizer for comminuting leaves, twigs and garden residue comprising; a housing having a diverging frusto-conical inlet and a converging frusto-conical discharge openings at opposite end thereof for receiving leaves, twigs and garden residue therein, said housing having a central cylindrical member with lower and upper half-cylindrical shells cooperatively aligned and hingedly connected together for pivotally displacing the upper shell relative to said lower shell and an internal chamber and a shaft rotatably axially-supported therein, means for rotating said shaft, a debris dispersion means mounted on said shaft adjacent to said inlet in said internal chamber, a plurality of comminuting means mounted on said shaft in axial-spaced relation to said debris dispersion means and axially spaced from each other to rotate with said shaft, a series of shearing means flush mounted in said internal chamber and spaced from each other and including inverted V-shaped anvils, each of said series of shearing means having comminuting means receiving slots therebetween through which a shaft-mounted comminuting means passes to cooperate with the shearing means whereby leaves, twigs and garden residues will be comminuted progressively as they pass through said housing by the action of said comminuting means and shearing means, and means for generating a flow of air through said housing which flow of air will induce the leaves, twigs and garden residues into and through said housing for discharge therefrom.

4,214,714

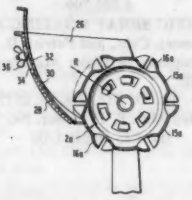
APPARATUS FOR CUTTING FOOD

Elwood M. Graham, Ocean Springs, Miss., assignor to M. H. Graham Corporation, Biloxi, Miss.

Filed Aug. 15, 1978, Ser. No. 933,683

Int. Cl.[2] B02C *18/22*

U.S. Cl. 241—93 **8 Claims**



1. A rotary food cutting apparatus comprising,

a hopper for holding food to be cut, said hopper having a lower edge,

means for rotationally supporting a cutter cone at a position which extends adjacent to the lower edge of the hopper,

a set of interchangeable cutter cones including a first cutter cone and a second cutter cone each having a conical wall portion which is symmetrical with respect to a central axis, said cutter cones each being detachable from said cone-supporting means, and cutting portions projecting radially outwardly from said conical wall portion, each cutting portion providing a forwardly facing opening and a sharp forwardly facing cutting edge for cutting material in said hopper.

said wall portions of said cutter cones being substantially geometrically identical, said cutting portions of said first cutter cone projecting from their associated wall portion a distance which is less than the corresponding distance by which the cutting portions of said second cutter cone project from their respective conical wall portion, said first and second cones providing different depths of cut in that said forwardly facing openings on said first cutter cone have a height from their respective wall portion which is less than the corresponding height of the forwardly facing openings on said second cutter cone, the corresponding said cutting portions of said first and second cutter cones lying at different distances from their respective central axes,

said lower edge of the hopper being movable to vary its distance from the cutter cones, means for retaining said lower edge of the hopper at positions which lie proximate to the path of the cutting portions of the cutter cone.

4,214,715

ROTARY FOOD CUTTING APPARATUS

Elwood M. Graham, Ocean Springs, Miss., assignor to M. H. Graham Corporation, Biloxi, Miss.

Filed Aug. 15, 1978, Ser. No. 933,684

Int. Cl.[2] B02C *18/18*

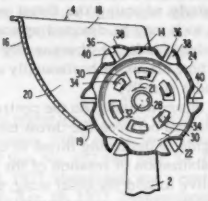
U.S. Cl. 241—93 **4 Claims**

1. A rotary food cutting apparatus comprising,

a hopper for holding food to be cut, said hopper having a lower edge,

a spindle, means for supporting said spindle for rotary movement about an axis which is higher than the lower edge of the hopper, and means on said spindle for supporting a cutter cone at a position which extends adjacent to the lower edge of the hopper,

a set of interchangeable cutter cones each having a conical wall portion which is symmetrical with respect to a central axis, and cutting portions projecting radially outwardly from said conical wall portion, each cutting portion providing a forwardly facing opening and a sharp forwardly facing cutting edge for cutting material in said hopper,



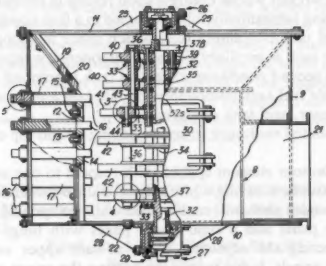
said cutter cones being constructed to provide products of different thicknesses by providing a first said cutter cone having a said wall portion which has radii which are greater than the corresponding radii of the wall portion of a second said cutter cone, said cutting portions of said first cutter cone projecting from their associated wall portion a distance which is less than the corresponding distance by which the cutting portions of said second cutter cone project from their respective conical wall portion, the corresponding said cutting portions of said first and second cutter cones lying at substantially the same distance from their respective central axes so as to lie substantially the same distance from the lower edge of the hopper.

4,214,716

PULVERIZER

Michel A. Jadouin, 4/31 William St., Rose Bay, New South Wales, Australia (2029)

Continuation-in-part of Ser. No. 845,883, Oct. 27, 1977, abandoned. This application Sep. 28, 1978, Ser. No. 946,636
Claims priority, application Australia, Nov. 11, 1976, PC7948
Int. Cl.[2] B02C *13/282*
U.S. Cl. 241—186 R **9 Claims**



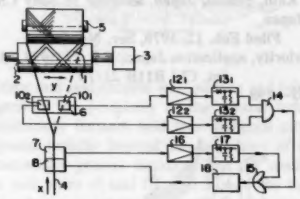
1. A pulveriser of the kind comprising a barrel having an open top for infeed of material to be pulverised and a bottom outlet for departure of pulverised material, an upright rotor rotatable within the barrel and a plurality of hammers mounted on the rotor; characterised in that a plurality of stationary blades are cantilevered to project inwardly from the barrel wall so as to be out of contact with the hammers, said barrel comprises an inner shell spaced radially from an outer shell and enclosed by the latter, a plurality of bracing tubes extend radially from one shell to the other and supported by both, and said stationary blades are at least partially housed by said bracing tubes whereby said stationary blades are braced against lateral forces.

4,214,717

FALSE REELING PREVENTING APPARATUS FOR TRAVERSE THREAD REELING MACHINES

Shozaburo Makino, Kawasaki, and Seiji Otobe, Yono, both of Japan, assignors to Nippon Seren Co. Ltd., Kawasaki, Japan

Continuation of Ser. No. 694,566, Jun. 10, 1976, abandoned. This application May 16, 1979, Ser. No. 39,552
Claims priority, application Japan, Jun. 10, 1975, 50-69115
Int. Cl.[2] B65H *63/00*
U.S. Cl. 242—36 **4 Claims**



1. In a reeling machine in which a thread is traversed as it is reeled on a bobbin, the improvement comprising in combination,

two electronic sensors positioned to intercept without contact with the thread the traverse of the thread in two spaced traverse positions representative of a full traverse span across the bobbin and to produce a pulse from each sensor upon traverse of the thread across the full traverse span,

rectifier means for each sensor providing a separate d-c signal having a time constant maintaining a d-c signal when the thread is traversed at its normal traverse rate,

a single logic circuit combining the two d-c signals to produce an output signal whenever either of the separate d-c signals are missing because of an imcomplete thread traverse, and

alarm means for preventing the thread from being reeled onto said bobbin responsive to the output signal from the single logic circuit.

4,214,718

WIRE REEL SUPPORT BRACKETS

Bruce A. Silkey, Rte. 1, Box 162A, Lawrence, Kans. 66044

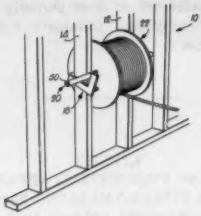
Filed Mar. 23, 1979, Ser. No. 23,150
Int. Cl.[2] B65H *49/00*
U.S. Cl. 242—129.6 **5 Claims**

1. Structure for rotatably supporting a reel of electrical wire or the like, comprising:

a pair of spaced, upright members each presenting a pair of spaced, opposed faces;

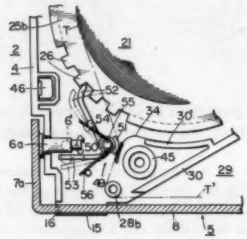
a bracket mounted on each member respectively and including a pair of spaced, opposed, surfaces for respectively engaging said faces of the corresponding member, and an upright arm proximal to one of said faces;

an elongated, reel-supporting element spanning said members and wedged between and in engagement with each of



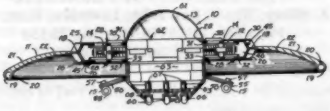
said one faces and the proximal bracket arms for securely holding said element in place.

4,214,719
TAPE CASSETTE
Shinichiro Kato, Sendai, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Feb. 12, 1979, Ser. No. 11,560
Claims priority, application Japan, Feb. 17, 1978, 53-19111[U]
Int. Cl.[2] B11B *23/10*
U.S. Cl. 242—198 **11 Claims**



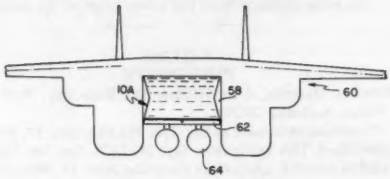
1. In a tape cassette including a cassette casing, at least one tape reel disposed inside said cassette casing, a length of tape wound on said tape reel, an opening formed in said cassette casing, at least two tape guide members, one arranged on each side of said opening for guiding said length of tape in a tape path which extends along said opening, and a brake member engagable with said tape reel to prevent said tape reel from rotating when said tape cassette is not in use; at least one of said tape guide members and said brake member being formed integrally as one body.

4,214,720
FLYING DISC
Edwin R. DeSautel, P.O. Box 1052, Richland, Wash. 99352
Filed Feb. 26, 1979, Ser. No. 15,410
Int. Cl.[3] B64C *27/20, 29/00*
U.S. Cl. 244—12.2 **24 Claims**



1. A flying disc, comprising:
a central support structure including an upright axis;
a discoidal wing having a convex upper surface and a concave lower surface centered about the upright axis;
bearings mounting the wing and support structure to one another for free independent rotation about the upright axis;
a first circular set of turbine blades centered on the upright axis and mounted on the wing to project upwardly on the convex upper surface thereof;
a second circular set of turbine blades centered on the upright axis and mounted on the wing to project downwardly on the concave lower surface thereof;
said turbine blades of both sets being arranged to impart rotational motion of said discoidal wing about the upright axis in response to fluid thrust directed against them from within the central support structure;
thrust means within the support structure for producing an outwardly directed thrust against the turbine blades;
means for angularly adjusting the thrust produced by the thrust means so it may be directed upwardly against the first set of turbine blades or downwardly against the second set of turbine blades, or horizontally against both sets of turbine blades equally;
thrust diverting means mounted on the central support structure and positioned between the thrust means and turbine blades for angularly deflecting thrust to cause a resultant rotation or stabilization of rotation of the central support structure relative to said discoidal wing; and
horizontal directional thrust means mounted on the central support structure for producing directional thrust to move the disc horizontally during flight.

4,214,721
AIRCRAFT COLLAPSIBLE FUEL TANK
Walter R. Burhans, Jr., Miller Place; James L. Ciccarello, Bay Shore, and Charles H. Stumpf, Commack, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Apr. 14, 1978, Ser. No. 896,456
Int. Cl.[2] B64D *37/04, 37/06*
U.S. Cl. 244—135 B **3 Claims**



1. In an aircraft whose configuration results in interior space thereof being substantially fully occupied in a first condition by only a fuel tank containing fuel, which space is occupied by equipment such as ancillary aircraft components, weapons, and stores in a second condition when said tank is emptied of fuel, a collapsible fuel tank immovably mounted on a surface defining said space, said tank comprising:
an articulated enclosure structure having a rigid top element and
a rigid bottom element spaced with respect to one another, said structure having a plurality of walls between said top and bottom elements, each of said walls comprising a rigid upper panel and a rigid lower panel with hinge means connecting the adjoining edges of said upper and said lower panels, hinge means connecting the upper edge of each of said upper panels with the associated peripheral region of said top element substantially at the edge thereof and hinge means connecting the lower edge of each of said lower panels with the associated peripheral region of said bottom element substantially at the edge thereof;
a non-vented, fuel-impervious elastomeric bladder housed in said enclosure structure and protected thereby, the outer wall of said bladder being fastened to the inside surface of

said top and bottom elements and said panels, said hinged top and bottom elements and walls forming an erected substantially closed box structure when said bladder is filled with fuel, with said hinge means permitting said panels to be folded with respect to said top and bottom elements as fuel is withdrawn from said bladder;

mounting means for fixedly fastening said enclosure structure to aircraft structure;

means for pumping fuel into said bladder such that the distension thereof deploys at least said top element and said wall panels whereby in said first condition said enclosure structure is erected to thereby occupy said interior space; and

means for extracting fuel from said bladder such that said extraction of fuel causes the contraction of said bladder whereby said walls are folded and said tank is collapsed in said second condition to vacate said interior space such that it can be occupied by said equipment.

4,214,722

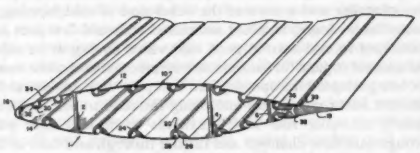
POLLUTION REDUCING AIRCRAFT PROPULSION

Raymond M. Tamura, 218 Lagoon Dr., Honolulu, Hi. 96819

Continuation of Ser. No. 532,646, Dec. 13, 1974, and Ser. No. 788,526, Apr. 18, 1977, abandoned, and a continuation-in-part of Ser. No. 788,528, Apr. 18, 1977. This application Nov. 15, 1978, Ser. No. 961,061

Int. Cl.² B64C *21/02*

U.S. Cl. 244—208 **7 Claims**



1. An aircraft pollution reducing propulsion airfoil system comprising a wing having upper and lower surfaces comprising wing skin plates extending longitudinally on the wing and being spaced one from another in chordwise directions, spars extending into the wing between the surfaces, stringer ducts extending along internal sides of the wing surfaces, the stringers having relatively rigid surface-supporting structure and having outward directed openings extending across the wing surfaces, interrupting the wing surfaces between edges of the wing skin plates, the ducts thereby forming stringer structural elements supporting the wing skin plates, the outward directed openings of the stringer ducts being arranged perpendicularly to the wing surfaces in a leading portion of the wing and tangential to the wing surfaces in a trailing portion of the wing surfaces, suction means connected to the stringer ducts with perpendicular openings for drawing gas into the ducts through those openings and blowing means connected to the ducts with tangential openings for flowing gas out of the tangential openings, combustion means connected to the suction means and to the blowing means for accelerating gas through the means.

4,214,723

SUPPORT FOR TUBING OR CABLES IN BUILDINGS

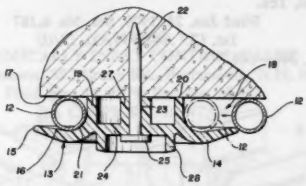
James M. Voorhees, Jr., 3921 River Club Rd., Edgewater, Md. 21037

Filed Jun. 1, 1978, Ser. No. 911,301

Int. Cl.² F16L *3/22*

U.S. Cl. 248—68 R **1 Claim**

1. A support element for bendable tubing or electrical cables in building construction comprising a unitary support element formed of a tough resilient material having a central hub defining a wide flat end face adapted for abutment with a ceiling surface against which tubing or electrical cables are to be held, a disc-like portion joined integrally with the central hub at the end of the hub away from said flat end face and being joined to the hub by a smooth arcuate wall portion whose radius is approximately one-half the distance between a plane defined by said flat end face and the low point on the upper side of said disc-like portion during the use of the support element, the disc-like portion tapering radially outwardly from said arcuate wall portion and terminating in a comparatively thin marginal circular edge which is spaced from the plane of the flat end face a distance substantially less than the distance between the plane of the end face and said low point, whereby tubing or electrical cables to be supported can be forced laterally through a constricted space between said thin marginal circular edge and an opposing ceiling surface against which the flat end face is abutted during use of the support element, the inserted tubing or cables then engaging snugly between said



ceiling surface and said arcuate wall portion and lying substantially tangent to the periphery of the central hub, said hub being cylindrically formed, said thin marginal circular edge being disposed radially beyond the periphery of the central hub a substantially greater distance than the spacing of said edge from said plane of said flat end face of the hub and said distance also being substantially greater than said radius of the arcuate wall portion to thereby define on the upper face of the tapering disc-like portion outwardly of the arcuate wall portion an annular radially wide inclined surface portion immediately inwardly of said circular edge, and said central hub having an axial central through opening adapted to receive a driven fastener used to anchor the support element firmly against a ceiling surface in a building.

4,214,724

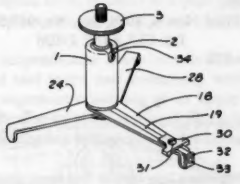
COLLAPSIBLE TRIPOD WITH SWIVEL LOCK

William N. Geiger, 13142 St. Thomas Dr., Santa Ana, Calif. 92705

Filed May 30, 1978, Ser. No. 910,356

Int. Cl.² F16M *13/00*

U.S. Cl. 248—167 **8 Claims**



1. In a tripod, the combination comprising:

a generally hollow housing having a bottom and a top opening;

three legs, one of said legs being mounted to the bottom of said housing in fixed relation therewith, the other two of said legs being pivotally coupled to the bottom of said housing;

swivel ball mount means having a ball portion swivelly positioned within said housing and a fastening portion extending through said opening;

pressure plate means within said housing, said pressure plate

means being configured for engaging a part of said ball portion;

means normally biasing said pressure plate means into contact with said ball portion thereby restraining said ball portion from swivelling; and

manually operable means operatively coupled to said one leg and to a trip lever within said housing, said trip lever being actuable by said manually operable means against said normally biasing means to thereby free said pressure plate means from the force of its bias for permitting swivelling of said ball portion.

4,214,725

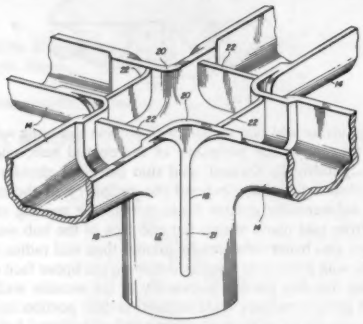
FURNITURE BASE

Gunter F. Eberle, Dallas, Tex., assignor to Vecta Contract, Inc., Dallas, Tex.

Filed Jan. 24, 1979, Ser. No. 6,187

Int. Cl.³ A47B *91/00, 13/02*

U.S. Cl. 248—188.7 **9 Claims**



1. A furniture base comprising a cast pedestal having substantially horizontal feet radially extending from a central upwardly projecting riser, a plurality of substantially vertical open slots in said riser, each one of said slots disposed between respective ones of said feet, and an upper support mounted on said riser.

4,214,726

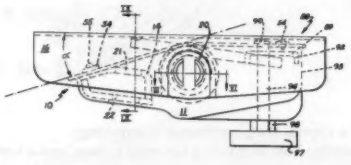
CHAIR CONTROL

Alexander A. Karrip, Grand Rapids; Jack R. Knoblauch, Byron Center; Charles C. Pergler, Grand Rapids, and Donald D. Korell, Ada, all of Mich., assignors to Steelcase, Inc., Grand Rapids, Mich.

Filed Nov. 6, 1978, Ser. No. 957,748

Int. Cl.² A47C *3/026*

U.S. Cl. 248—575 **28 Claims**



1. A housing for a chair control comprising:

an open top generally rectangular deep drawn cup having five sides for enclosing a torsional energy storage package;

means for securing a base structure to said cup and evenly distributing stresses to the walls of said cup comprising first and second generally L-shaped interlocking spindle support members, said support members being apertured for receiving a spindle and said support members forming a roughly box-shaped cup reinforcing structure welded to the bottom and three adjoining sidewalls of said cup; and

means for journaling a tilting chair member about said cup.

4,214,727

VALVE APPARATUS

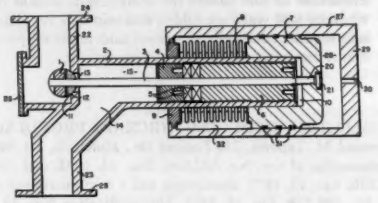
Martin Baram, 13 Svanholmvej, 2660 Brondby Strand, Denmark

Filed Oct. 2, 1978, Ser. No. 948,033

Claims priority, application Denmark, Oct. 25, 1977, 4733/77

Int. Cl.² F16K *31/143*

U.S. Cl. 251—63.4 **42 Claims**



1. A valve apparatus for fluid and gaseous materials comprising a valve housing having a first port at one end and a second port, said housing further comprising a flow chamber, a pressure chamber and a core at the other end of said housing, a controllable closure member associated with said first port and connected to said second port, said valve having at its other end control organs for said closure member, said closure member being adapted for opening said first port with an outwardly directed linear movement and being fastened to one end of a linearly movable rod which extends from said first port through said flow chamber and further through said core in the other end of the housing and from there through said pressure chamber to a firm connection with an end plate of a linearly movable piston, said piston surrounding said other end of the housing in gliding mutual contact, said piston being connected at its lower end to one end of a spring pipe, said spring pipe coaxially surrounding the housing and being fastened at its other end to a flange on the housing.

4,214,728

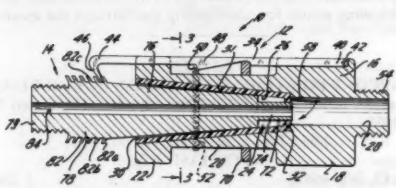
COUPLING DEVICE

Henry Fleischer, 18 Notch Park Rd., Little Falls, N.J. 07424

Division of Ser. No. 659,370, Feb. 19, 1976, Pat. No. 4,108,475, which is a division of Ser. No. 479,667, Jun. 17, 1974, abandoned, which is a continuation-in-part of Ser. No. 427,149, Dec. 21, 1973, abandoned. This application Jun. 29, 1978, Ser. No. 920,405

Int. Cl.² F16L *21/00, 37/28*

U.S. Cl. 251—149.2 **13 Claims**



1. A substantially fluid-tight coupling device comprising, in combination, a socket member and a plug member adapted to be removably disposed in said socket member in a first position to form a substantially fluid-tight seal between said members, said plug member comprising a conical-like member including

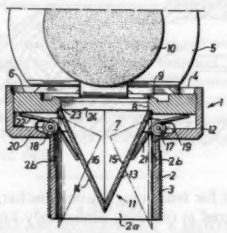
tapered outer walls, and inner walls and an end segment, said inner walls defining a bore running through said plug member, and at least two securing means, one of said securing means being disposed closer to a narrow end of said tapered outer walls than the other of said securing means, said socket member comprising a body portion including solid rigid outer walls and tapered inner walls defining a tapered passageway running through said body portion, at least one wear resistant lining disposed between said tapered outer walls of said plug member and said tapered passageway of said socket member, said tapered outer walls of said plug member being adapted to seat in an initial portion of said tapered passageway of said socket member, to define said first position and restricted to said initial position when so seated in that it cannot be moved deeper into the socket member, said plug member and socket member by means of said lining forming a substantially fluid-tight seal between said members, and only after portions of said lining have worn, said plug member is adapted to be repositioned with respect to said initial portion of said passageway of said socket member to a second portion of said passageway to define a second position and thereby form, by means of said lining, a substantially fluid-tight seal with said socket member, said socket member further including at least one securing means, a portion of which is connected to said body portion of said socket member, said at least one securing means being adapted to engage at least one of said securing means of said plug member when said plug and socket members are in their first position, and after a portion of said lining has worn and said plug member has been repositioned in said socket member to define said second position, a second of said securing means of said plug member and said at least one securing means of said socket member are adapted to be engaged in a second position relative to each other to retain said plug member in said socket member in substantially fluid-tight engagement, and movable closure means disposed in said passageway of said socket member, said closure means being in its closed position when said plug member is not seated in said socket member to close off said passageway of said socket member, and said closure means is adapted to be opened by said end segment of said plug member when said plug member is seated in said socket member.

4,214,729

CONNECTING VALVE

Rune Narfgren, Tyresö, Sweden, assignor to AB Svenska Flaktfabriken, Stockholm, Sweden

Filed Nov. 20, 1978, Ser. No. 962,467
Claims priority, application Sweden, Nov. 28, 1977, 7713443
Int. Cl.³ F16L *29/00*
U.S. Cl. 251—149.2 **3 Claims**



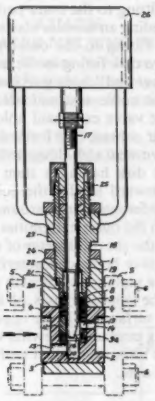
1. A connecting valve for connecting a tubular connecting nozzle for a vacuum cleaning equipment to a suction duct system, said nozzle having a cylindrical outer surface, said connecting valve consisting of a valve housing provided with an outer cover, and an inner shut-off device for the vacuum in the suction duct system actuated by the connecting nozzle and provided with at least two spring-prestressed flaps (13,14) mounted for pivotal movement on shafts in the upstream portion (12) of the valve housing (1), which flaps in closed position abut each other and thereby form a funnel-shaped closure of the mouth of the suction duct (7), the point end of the funnel being directed inward to the duct, each flap being formed as a portion cut out of a cylindrical pipe wall, the concave surface (15,16) of which agrees with the outer surface of the connecting nozzle, said shafts being mounted in grooves (19,20) permitting outward displacement of said shafts in the valve housing in order to bring about a combined rotation and displacing movement of the flaps upon insertion of the connecting nozzle therebetween.

4,214,730

CHEMICALLY INERT CONTROL VALVE

Hans D. Baumann, 35 Mirana Rd., Portsmouth, N.H. 03801

Filed Apr. 11, 1979, Ser. No. 29,147
Int. Cl.³ F16K *1/52, 47/04*
U.S. Cl. 251—171 **8 Claims**

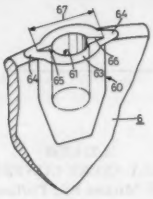


1. Chemically inert control valve comprising
(a) housing having a longitudinal central bore extending throughout its lengths;
(b) inlet and outlet end formed on said housing, said inlet and out ends adapted to be coupled in a pipe line;
(c) a cylindrical insert removeably received in said central bore;
(d) a central perpendicular cross-bore intersects both said housing and said insert and containing within a tubular packing arrangement consisting of an upper and a lower portion, separated by tubular spacer means having one or more communicating passages between its inner and outer periphery;
(e) a plug slidably engaged within said packing arrangement, one lower terminating end of said plug arranged to selectively engage or disengage the lower portion of said packing arrangement;
(f) at least one lower horizontal co-passage within said cylindrical insert and located below the lower portion of said packing arrangement for communication of fluid towards the central perpendicular cross-bore;
(g) one or more upper horizontal passages within said cylindrical insert and communicating with said passages in the tubular spacer means;
(h) means to position said plug;
(i) means to compress said packing arrangement.

4,214,731
BUTTERFLY VALVE

Kazunari Oota, and Kazuhiro Yamazaki, both of Hirakata, Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Apr. 3, 1978, Ser. No. 892,857
Claims priority, application Japan, Apr. 1, 1977, 52-37978; Apr. 1, 1977, 52-37979; Apr. 1, 1977, 52-37980
Int. Cl.³ F16K *1/226*
U.S. Cl. 251—306 4 Claims

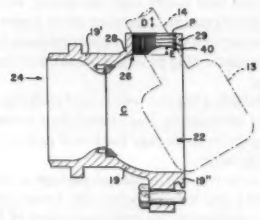


1. A butterfly valve comprising a valve case having an inner peripheral surface defining a flow passage therethrough, an annular valve seat fitting to the inner peripheral surface of the valve case and including an annular elastic seat member and an annular metal core fitting to the outer periphery of the seat member, and a valve disk fitting in the annular valve seat and supported at its upper and lower portions by stems extending through holes in the valve seat and held by an upper and a lower portion of the valve case, said holes forming the center of an elliptical planar contact face formed on the inside surface of said annular valve seat and elongated circumferentially of the seat, said valve disk having a stem bore provided with cutouts extending inward axially thereof, said cutouts being positioned in circumferential area around said bore opening, the distance between the outer extremities of said cutouts being slightly longer than the short diameter of said elliptical contact face, the butterfly valve being characterized in that when the valve is installed in a piping system with pipe flanges fitted to the valve case at the opposite ends of its flow passage, the opposed pipe flange surfaces hold the opposite side faces of the valve seat in pressing contact therewith, elastically deforming the seat member into intimate contact with the inner peripheral surface of the valve case.

4,214,732
SIDE-SPLIT BALL VALVE CONSTRUCTION

Peter G. Kindersley, Glens Falls, N.Y., assignor to Kamyr Valves, Inc., Glens Falls, N.Y.

Filed May 17, 1978, Ser. No. 906,789
Int. Cl.³ F16K *5/06*
U.S. Cl. 251—315 7 Claims



5. A ball valve assembly comprising:

a one-piece ball and shaft, said ball having a flattened portion adjacent said shaft and having a through bore;

a valve housing comprising a body defining a central chamber, and having a flow port at a first end thereof and defining an opening at a second end thereof substantially larger than said flow port; and an end cap cooperating with said body second end at a first end thereof;

means for attaching said body and said end cap together in sealing relationship so that fluid may flow through said fluid ports;

means for defining a passageway in said body for receipt of said shaft, said passageway being elongated in a direction perpendicular to said flow port, and said means including a thick wall portion that is relatively thick in the direction of elongation of said passageway, and a thin wall portion that is relatively thin in the direction of elongation of said passageway, said thick wall portion disposed toward said body first end, and said thin wall portion toward said body second end, and a scallop being formed in said thin wall portion, said scallop effecting a reduction of thickness of said thin wall portion in the direction of elongation of said passageway at a central portion thereof; said passageway being smooth-walled and said end cap being slidingly engaged with and bolted to said body;

first sealing means, associated with said body, encircling said body fluid port for cooperation with said ball,

second sealing means, associated with said end cap, encircling said end cap fluid port for cooperation with said ball,

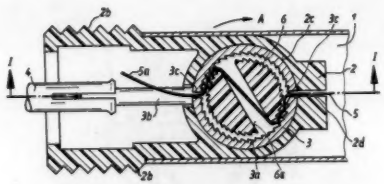
said opening at said second end of said body being large enough to allow passageway of said one-piece ball and stem therethrough so that said stem can be passed through said scallop and then through said passageway, and said ball seated in cooperation with said first sealing means, and

bushing means for cooperating with said passageway and supporting and sealing said shaft.

4,214,733
DEVICE FOR TENSIONING CORONA-DISCHARGE WIRES

Konrad Brückl, and Georg Fryda, both of Munich, Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed May 29, 1979, Ser. No. 43,302
Int. Cl.³ A63B *61/04*
U.S. Cl. 339—274 14 Claims



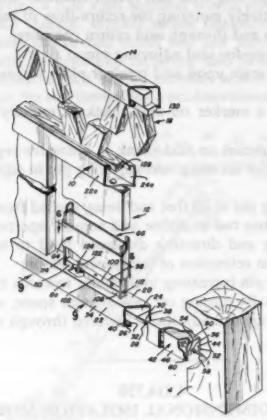
1. In a device for tensioning corona-discharge wires which are fixedly secured at one end, particularly for use in electrostatic copiers, a combination comprising an internally toothed sleeve member; and an externally toothed clamping member received within said sleeve member, each of said members having a transverse opening inclined to the longitudinal axis of said sleeve member so that, when a free end portion of a corona-discharge wire is inserted through both said openings when the same are in registry and the members are thereupon turned relative to one another, the free end portion of the wire will be drawn and become clamped between the teeth of said members under simultaneous tensioning of the wire.

4,214,734

FENCE SYSTEM

Robert T. Stafford, 5112 Forest Ave., Downers Grove, Ill. 60515

Division of Ser. No. 807,384, Jun. 17, 1977, abandoned. This application Aug. 4, 1978, Ser. No. 930,986
Int. Cl.² E04H *17/00*
U.S. Cl. 256—24 **6 Claims**



1. A fence section adapted for disposition between adjacent fence posts comprising an upper rail and a lower rail, each rail including

a rail portion including a base panel, substantially parallel side panels joined to the base panel at opposite edges of the base panel, web portions joined to the side panels and overlying the base panel, and flanges attached to the web portions, said flanges being disposed from the web portions spaced apart from and substantially parallel to the side panels and also being disposed in substantially parallel spaced apart relationship to the base panel whereby said web portions and flanges and the distal edge portions of the side panels form parallel channels overlying and spaced apart from the base panel,

an anchor portion telescopically and slidably mounted in an end of the rail portion, said anchor portion including an end web and side webs connected to a base web, said anchor portion side webs and said anchor portion base web being disposed adjacent the side panels and the base panel respectively of the rail portion,

a plurality of fence panels disposed intermediate the upper rail and the lower rail,

the plurality of fence panels being engaged on and extending from the upper rail to the lower rail, and

the upper rail being connected to the lower rail by a beam which includes shoulders at each end abutting the webs of the upper and lower rails and a tongue at each end extending from between the shoulders and disposed between the flanges of the rails.

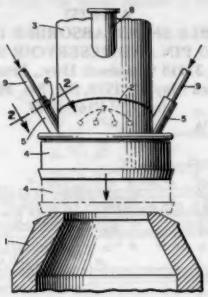
4,214,735

PRESSURE MEASUREMENT IN A HOOD ABOVE A CONVERTER FOR MANUFACTURING STEEL

Nicolaas H. M. Beentjes, Uitgeest, Netherlands, assignor to Hoogovens IJmuiden, B.V., IJmuiden, Netherlands

Filed Sep. 1, 1978, Ser. No. 938,908
Int. Cl.² C21C *5/42*
U.S. Cl. 266—99 **4 Claims**

1. In an apparatus for manufacturing steel comprising a converter, a vertical hood adapted to be connected to the mouth of the converter, at least one pressure-measuring point for determining the pressure within the hood, and at least one conduit opening downwardly in a non-vertical position into said hood for introducing secondary materials into the converter, the improvement whereby the said measuring point is located in the upper side of the said conduit.

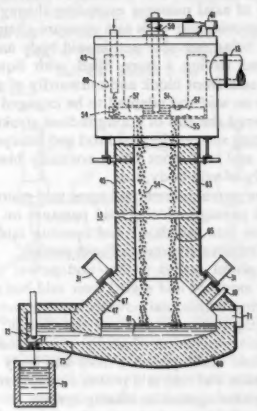


4,214,736

ARC HEATER MELTING SYSTEM

Charles B. Wolf, Irwin; Thomas N. Meyer, Murrysville; Maurice G. Fey, Plum, and Francis J. Harvey, II, Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 23, 1979, Ser. No. 32,326
Int. Cl.² C21C *5/52*; H05B *7/18*
U.S. Cl. 266—200 **5 Claims**



1. Apparatus for melting metal chips comprising:

(a) a metallurgical vessel forming a melting chamber and having a wall with an aperture therethrough,

(b) an arc heater mounted on the outer surface of the wall and having an end opening communicating with the melting chamber through the aperture,

(c) the arc heater having axially spaced cylindrical electrodes forming an arc chamber,

(d) one cylindrical electrode extending beyond the outer surface of the wall and through the aperture and opening and toward the melting chamber,

(e) means for striking an electric arc in the axial space,

(f) means for rotating the arc within the arc chamber, and

(g) means for blowing gas through the space to form an elongated arc stream comprising the gas and the arc and into the melting chamber, whereby extension of the elec-

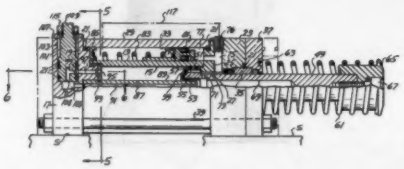
trode far enough toward the melting chamber retards errosion of the wall by the arc stream.

4,214,737

ADJUSTABLE SHOCK ABSORBER INCLUDING METERING PIN AND RESERVOIR STRUCTURE

Leland F. Blatt, 31915 Groesbeck Hwy., Fraser, Mich. 48026

Filed May 11, 1979, Ser. No. 38,256
Int. Cl.[3] F16F 9/48
U.S. Cl. 267—8 A **5 Claims**



1. A shock absorber comprising an elongated body having a bore filled with liquid;

an elongated barrel, having a bore, spaced from and concentrically receiving said body, and forming a power chamber therebetween;

spaced front and rear blocks sealingly receiving and secured to the ends of said body and barrel, defining with said barrel and body said power chamber and a pressure chamber respectively and closing said bores, said pressure and power chambers being in communication;

a power piston having an axial bore and adjacent one end a plurality of radial ports communicating with said axial bore, and with one end of said power chamber, and a plurality of axial passages extending through said piston, and communicating with said pressure chamber;

said piston being movable within said body and including a piston rod having a bore filled with liquid extending through said front block and outwardly of said body;

an end cap on said rod adapted to be engaged by a moving mass toward the end of a longitudinal stroke;

a coiled spring surrounding said rod and interposed between said cap and said front block normally biasing said rod outwardly of said body;

a float valve movably mounted upon said piston, in registry with said passages closing said passages on retraction of said piston into said body and opening said passages on forward return movement of said piston;

a floating piston sealed within said power chamber and movably mounted and sealed over said body;

a coiled spring within said power chamber normally biasing said floating piston toward one end thereof;

the retraction movement of said power piston causing the flow of fluid under pressure from said body through said power piston and into said power chamber retracting said floating piston against its biasing spring;

there being a fluid return chamber in said rear block having an inlet and an outlet;

an axially apertured externally tapered metering pin at one end secured to said rear block in communicating with said outlet;

said pin extending the length of said body and axially into said power piston and piston rod bore forming an annular aperture therebetween and communicating with said ports and power chamber;

there being an elongated axial passage in said rear block communicating with said body bore and said return chamber;

retraction of said power piston over said metering pin dispersing fluid in said body through the annular aperture between said power piston and metering pin for delivery through said ports and into said power chamber;

said annular aperture decreasing in width as the pressure piston retracts due to the taper of said pin, the remaining fluid being bled into said return chamber and through said metering pin, through said ports and into said power chamber whereby said power piston with its load is decelerated and comes to a smooth stop at the end of its stroke;

a flow adjusting pin having a shank extending transversely of said barrel and rotatably mounted within said rear block and having a variable orifice communicating with said passage and with said return chamber inlet for variably selectively metering the return flow of the displaced liquid into and through said return chamber;

a retainer plate for said adjusting pin;

a calibrated scale upon said retainer plate surrounding said pin shank;

there being a marker on said shank in registry with said scale;

and friction means on said shank in operative registry with said plate for securing said adjusting pin in adjusted position;

said metering pin at its free end being spaced from the bore of said piston rod to define said annular aperture;

for receiving and directing displaced fluid to said power chamber on retraction of said power piston;

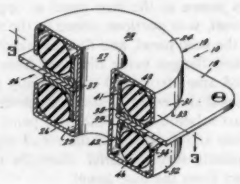
the metering pin increasing in diameter towards its opposite end, gradually closing off said annular space, so that the displaced liquid is adjustably metered through said return chamber.

4,214,738

THREE-DIMENSIONAL ISOLATION MOUNT

Russell L. Casper, Loveland, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed May 2, 1977, Ser. No. 793,010
Int. Cl.[2] F16F 15/02
U.S. Cl. 267—141.1 **17 Claims**



1. An improved isolation mount of the type having first and second mount members connectible to respective elements susceptible to relative axial and radial vibration and having a damping means therebetween to dampen relative axial vibrations wherein the improvement comprises:

(a) a cylindrical wall extending axially from the first mount member and at least partially engaging throughout its circumference the damping means;

(b) a cylindrical wall extending axially from the second member and at least partially engaging throughout its circumference the damping means, said first mount member cylindrical wall and said second mount member cylindrical wall having said damping means disposed therebetween to dampen relative radial vibrations between the first and second mount means, and wherein said second mount member cylindrical wall limits relative axial movement between said first and second mount members to a predetermined degree.

4,214,739

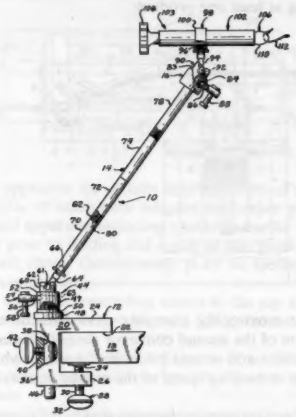
FLY TYING DEVICE

Gregory M. Dailey, 404 S. Governor St., Iowa City, Iowa 52240

Filed Sep. 29, 1978, Ser. No. 947,051
Int. Cl.[2] B25B 1/22
U.S. Cl. 269—75 **12 Claims**

1. A fly tying device for securing a fishing hook during fly

tying operations, said device including a collet and jaw mechanism adapted to hold said fishing hook, a shaft member, a clamp member adapted to clamp onto a surface, a first connecting means for connecting said collect and jaw mechanism to the upper terminus of said shaft member and operating to allow said collet and jaw mechanism to pivot in a completely universal manner about said upper terminus, said first connecting means including a first ball joint assembly including a first ball member having a first joint segment which projects from the outer surface thereof, bracket means connected to said first joint segment and to said collet and jaw mechanism, a first socket means for pivotally receiving said first ball member, said first socket means having recesses which extend downwardly from the top thereof for a predetermined distance, said



recesses being formed to receive said first joint segment, a first housing structure affixed to said upper terminus of said shaft member, said first socket means being supported by said first housing structure for rotation relative thereto, and a first locking means attached to said first housing structure, said first locking means operating to selectively lock said first ball member against movement within said first socket means, and a second connecting means for connectthe lower terminus of said shaft member to said clamp member, said second connecting means operating to allow said shaft member to pivot in a hemispherical manner about said lower terminus, said first and second connecting means cooperating to facilitate movement of said collet and jaw mechanism to a wide variety of positions to provide increased convenience, greater ease, and comfort for the fly tyer during the fly tying operation.

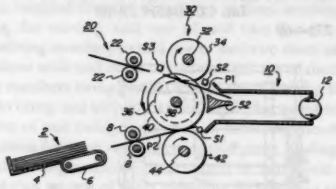
4,214,740

SHEET REVERSING MECHANISM

Thomas Acquaviva, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 2, 1978, Ser. No. 902,136
Int. Cl.³ B65H *5/06, 29/20*
U.S. Cl. 271—3 **8 Claims**

1. Sheet reversing apparatus having
a sheet input station
a sheet output station,
a reversing station receiving a sheet from the input station for conveyance to the output station and a roller mechanism coupled to the reversing station, the roller mechanism comprising
a first roller system,
a second roller system, the first roller system engaging the second roller system, and
a third roller system, the third roller system engaging the second roller system, the second roller system having concentrically supported first and second rolls rotatable relative to one another, the diameter of the first roll being different from the diameter of the second roll, the first roller system continuously engaging the first roll for conveying sheets from the input station to the reversing sta-



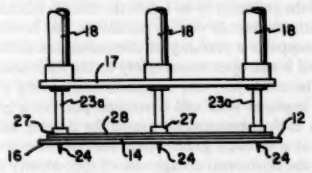
tion and the third roller system continuously engaging the second roll to convey sheets from the reversing station to the output station, wherein the first and second rolls are adapted for independent operation.

4,214,741

NEEDLE PICKUP DEVICE

Douglas J. Crawford, Waterford, N.Y., assignor to Cluett, Peabody & Co., Inc., New York, N.Y.

Continuation of Ser. No. 835,781, Sep. 22, 1977. This application Jun. 4, 1979, Ser. No. 44,986
Int. Cl.³ B65H *3/22*
U.S. Cl. 271—18.3 **2 Claims**

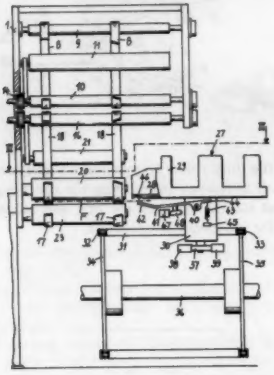


1. A device adapted to pick up and release a layer of sheet material from a loading platform comprising, a frame located in overlying relationship above said platform, a plurality of needles secured to said frame to project downwardly toward said layer from an undersurface of said frame, said needles being spaced apart lengthwise and widthwise to pierce said layer peripherally thereof, a single flat plate extending about and continuously extending between all of said needles horizontally beneath said frame, means for moving said plate toward said sheet material to press the material lying between all of said needles uniformly toward and against said platform, apertures defined by said plate for receiving said needles, means for moving said needles through said plate and through said sheet material, means for limiting movement of said needles through said plate and into said material, means for maintaining said plate and needles in a predetermined relative position while transporting said sheet material to an alternate location, and means for moving said plate upon reaching said alternate location away from said frame to withdraw said needles from said sheet material whereby said sheet material is stripped from said needles and is deposited at said alternate location.

4,214,742
DEVICE FOR FEEDING SHEETS TO BOXING MACHINES

Guglielmo Martelli, Via Gaibola, 13/3*, Bologna, Italy

Filed Oct. 30, 1978, Ser. No. 956,015
Claims priority, application Italy, Nov. 7, 1977, 3594 A/77
Int. Cl.[2] B65H 29/68
U.S. Cl. 271—69 5 Claims



1. A device for feeding sheets to boxing machines, characterized in that it comprises a pair of flexible members driven with continuous motion and disposed in endless configuration about respective idle rollers in such a manner as to comprise two portions in which said flexible members are adjacent to each other to retain therebetween the sheets to be fed to the boxing machine and originating from a store, such that a part of said sheets projects laterally, one of said portions describing a path which is inclined downwards, followed by a horizontal portion which forms an obtuse angle with the inclined portion, a conveyor for the products to be fed to the boxing machine, which moves with continuous motion parallel to said horizontal portion and supports a plurality of compartments uniformly distributed on it and open transversely to the direction of movement of the conveyor, said compartments having a base substantially coplanar with said horizontal portion, a grip associated with each compartment, means for driving said flexible members at a velocity greater than that of the conveyor and such that the horizontal component of the velocity along said inclined portion is equal to that of the conveyor so as to enable the projecting part of the sheets to penetrate between the compartments without interfering therewith as the sheets pass along the inclined portion, and then to accelerate to reach the grip of the front compartment, and cam means to cause the grip to grip said projecting portion in proximity to the end of said horizontal portion.

4,214,743
APPARATUS FOR DIVIDING A CONTINUOUS STREAM OF FLAT PRODUCTS, ESPECIALLY PRINTED PRODUCTS, INTO INDIVIDUAL SECTIONS

Jacques Meier, Zurich, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Oct. 10, 1978, Ser. No. 949,516
Claims priority, application Switzerland, Oct. 24, 1977, 12893/77; Nov. 25, 1977, 14462/77
Int. Cl.[3] B65H 29/66, 29/68, 33/12
U.S. Cl. 271—182 12 Claims

1. An apparatus for dividing a continuous stream, especially an imbricated product stream, of flat products, preferably printed products, into individual sections, comprising:

A first conveyor device for feeding the products, said first conveyor device having a predetermined conveying direction;

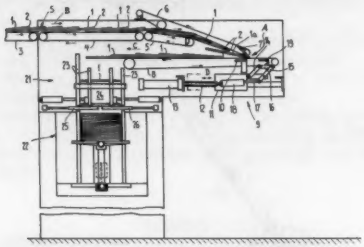
a second conveyor device arranged after the first conveyor device;

said second conveyor device and said first conveyor device coacting with one another so as to define a region of transfer for the products from the first conveyor device to the second conveyor device;

said second conveyor device, at least at the transfer region, being arranged below said first conveyor device;

said second conveyor device, at least at the transfer region, having a conveying direction opposite to the conveying direction of the first conveyor device;

a clamping device for selectively and temporarily fixedly holding at least one product;



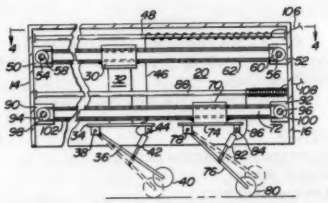
means for moving the clamping device in the conveying direction of the second conveyor device between a starting position and an end position at a speed which is less than the conveying speed of the second conveyor device; and

means for activating said clamping device for selectively and temporarily fixedly holding at least one product moving in the conveying direction of the second conveyor device during the movement of the clamping device thereby dividing the continuous stream into individual sections, and for subsequently deactivating said clamping device for allowing said at least one held product to be again conveyed by said second conveyor device.

4,214,744
SNUBBING APPARATUS

Donald J. Evans, Cherry Hill, N.J., assignor to Molins Machine Company, Inc., Cherry Hill, N.J.

Filed Jun. 8, 1978, Ser. No. 913,616
Int. Cl.[2] B65H 29/66
U.S. Cl. 271—202 11 Claims



1. A snubbing apparatus for snubbing sheets on a shingling conveyor comprising a support having guide means, a plurality of sets of aligned rollers guided for movement by said guide means so as to enable each set of rollers to be positionable at different locations for snubbing different length sheets, motor means for moving each set of rollers along their respective guide means, power means connected to each roller for selectively moving the same downwardly to a snubbing position and upwardly to an inoperative position, each roller being

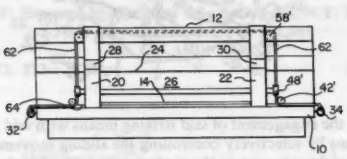
supported by an arm, each arm being pivotably connected at its upper end to a base plate, each base plate being connected to a discrete header guided for parallel movement along said guide means, said guide means including a track for each header, and said tracks being parallel to one another.

4,214,745

SAFETY GUARD FOR SHEET FEEDING MECHANISMS

Gordon L. Morgret, Baltimore, Md., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Aug. 14, 1978, Ser. No. 933,197
Int. Cl.[2] B65H 5/06, 9/04
U.S. Cl. 271—272 **1 Claim**



1. In an apparatus for serially feeding sheets of material to the feed rolls of machinery adapted to further process the material, said apparatus including a table means for supporting said sheets prior to feeding and a pair of side guide means for aligning said sheets therebetween prior to feeding, the improvement comprising:

a guard means for restricting access to the nip of said rolls outward the sheets within said guide means, the guard means including:

(i) anchor means fixed to a first side of said table means,

(ii) a continuous spiral rope member fixed to said anchor means,

(iii) a plurality of rope receiving means rotatably mounted on the first one of said side guide means, said rope receiving means adapted to conduct said rope the height of said side guide means,

(iv) a plurality of rope receiving means mounted on said second side guide means, said rope receiving means on said second side guide means adapted to receive said rope from said first side guide means to conduct said rope the height of said second side guide means; and

(v) second anchor means fixed to a second side of said table means, said second anchor means adapted to fixably receive said rope; said anchor means and said rope receiving means on said guide means positioning said rope member opposite the nip outward the sheets within said guide means to restrict access to the nip.

4,214,746

SORTING APPARATUS

Thomas P. Redding, Penfield; Glenn M. Herbert, and Alistair J. Caldwell, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 15, 1979, Ser. No. 3,441
Int. Cl.[3] B65H 39/11
U.S. Cl. 271—294 **6 Claims**

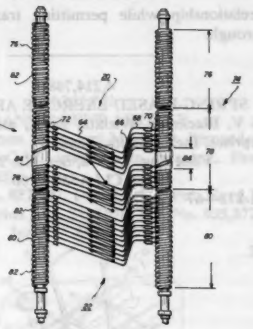
1. An apparatus for sorting sheets, including:

at least two groups of sheet receiving members, each of said two groups of sheet receiving members comprsing a series of individual sheet receiving members aranged to receive sheets, each of said two groups of sheet receiving members include a vertically extending array of closely spaced tray members;

a sheet loading station arranged to advance sheets into said individual sheet receiving members of said two groups of sheet receiving members;

at least two sheet unloading stations, one of said two sheet unloading stations being arranged to have one of said two groups of sheet receiving members positioned thereat for removing the sheets therefrom, and the other of said two sheet unloading stations being arranged to have the other of said two groups of sheet receiving members positioned thereat for removing the sheets therefrom; said one of said two sheet unloading stations being spaced from said other of said two sheet unloading stations; and

means, coupled to said two groups of sheet receiving members, for moving said one of said two groups of sheet receiving members to said one of said two sheet unloading stations with said other of said two groups of sheet receiving members being moved to said sheet loading station so as to bring said individual sheet receiving members of said other of said two groups of sheet receiving members into position for receiving sheets at said sheet loading station, said moving means being arranged to move said other of said two groups of sheet receiving members to said other of said two sheet unloading stations with said one of said two groups of sheet receiving members being moved to said sheet loading station so as to bring said individual sheet receiving members of said one of said two groups of



sheet receiving members into position for receiving sheets at said sheet loading station, thereby loading and unloading each of said two groups of sheet receiving members, said moving means comprising a frame, at least one vertically extending cam member supported by said frame, said cam member being divided into at least three independently rotatable portions with the first portion of said cam member being positioned adjacent said one of said two sheet unloading stations, the second portion of said cam member being positioned adjacent said sheet loading station, and the third portion of said cam member being positioned adjacent said other of said two sheet unloading stations, said cam member being coupled to said array of tray members of said two groups of sheet receiving members so as to move said tray members, first means for rotating the first portion of said cam member and the third portion of said cam member in unison with one another, and second means for rotating the second portion of said cam member independent of the first portion of said cam member and the third portion of said cam member.

4,214,747

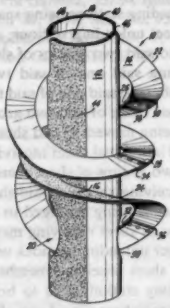
MOBILE GEOMETRICAL FORM

Francis Rebajes, San Miguel, 45, Torremolinos-Malaga, Spain

Filed Apr. 7, 1978, Ser. No. 894,604
Int. Cl.[2] D04D 9/04
U.S. Cl. 272—8 R **20 Claims**

1. A mobile geometrical form comprising first and second axially extending helixes interdigitally wound into each other, each end of one of said helixes continuing into a respective twisted loop which in turn continues into an adjacent end of the other of said helixes to thereby form a unitary structure, a

tube axially extending through said helixes, and anchoring means on said tube for retaining said loops in axially spaced



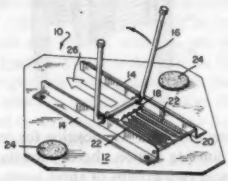
apart relationship while permitting translatory movement therethrough.

4,214,748

SPRING-BIASED EXERCISE APPARATUS

Charles V. Blackmon, Wichita, Kans., assignor to Blackmon Enterprises, Inc., Wichita, Kans.

Filed Aug. 7, 1978, Ser. No. 931,559
Int. Cl.² A63B 5/00
U.S. Cl. 272—67 **7 Claims**



1. An exercise device comprising a base; a generally U-shaped member having arms and a base pivotally connected to the base of the device; a U-shaped bolt means having spaced arms fixedly attached directly to the base of the U-shaped member; a plane including the spaced arms of the U-shaped bolt member forming an angle of less than 90° with a plane passing through the arms of the U-shaped member; spring bias means attached to the bight portion of the U-shaped bolt member and to the base of the device so that when said U-shaped member pivots away from said spring bias means and against the tension of the spring bias means, tension is put on said U-shaped member without having the spring bias means stretch over at least one of the arms of said U-shaped member and creating a safety hazard; the arms of said U-shaped bolt member being offset from the arms of the U-shaped member along the longitudinal axis of the base of the U-shaped member.

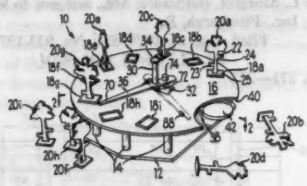
4,214,749

TARGET GAME APPARATUS

Ralph J. Kulesza, Chicago, and Jeffrey D. Breslow, Highland Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 10, 1978, Ser. No. 876,403
Int. Cl.² A63F 9/00
U.S. Cl. 273—1 R **5 Claims**

1. A game apparatus comprising:
a platform means defining a playing surface,
target means disposed on said playing surface,
striking means movable relative to said playing surface in a plane generally parallel to the playing surface and selectively engageable with said target means,
drive means including a rotatable shaft means extending through said platform means, said striking means being slidably mounted on said shaft means and constrained to rotate with said shaft means for movement relative to said playing surface, and
a control means associated with said striking means to control the engagement of said striking means with said target means by selectively controlling the sliding movement of the striking means on the shaft means, said control means being pivotally mounted below said platform means and having one end portion engageable with said striking means and an opposite end portion, on the other side of said pivot means, for selective manual operation by the user to control the movement of said striking means along the shaft means to vary the plane of movement thereof.

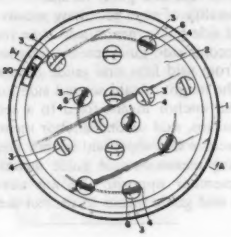


4,214,750

OCTOPUS CATCHING GAME KIT

Takeshi Shimizu, Igusadanchi 8-406, No. 377 Ohaza Igusa, Yashio-shi, Saitama-ken, Japan

Filed Jul. 31, 1978, Ser. No. 929,659
Int. Cl.² A63F 9/00
U.S. Cl. 273—1 M **7 Claims**



1. A game kit for simulating the sport of fishing, said kit comprising:
a generally cylindrical base having a central vertical access;
a horizontal flat circular playing surface disposed on said base, said playing surface having a plurality of cylindrical receptacles therein, each said receptacle having a center disposed on a circle concentric with said playing surface and each receptacle further having a vertical slot in a lower portion thereof, each said slot forming a segment of the circle on which said receptacle center is disposed;
a rotary board disposed beneath and concentric with said playing surface for rotation about said vertical access;
a means for rotating said rotary board;
a plurality of vertical upwardly sloping fins mounted on said rotary board, each said fin forming a segment of a circle concentric with said playing surface and disposed to move through a respective one of said slots, and each said fin terminating in a downwardly extending edge;
a plurality of magnetized playing pieces respectively slidably received in said receptacles;

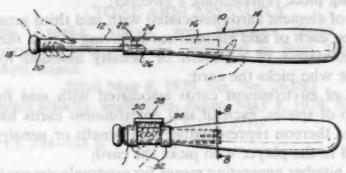
a magnetized playing piece attractor which can be manipulated by a player to remove a playing piece from a receptacle by magnetic attraction therebetween, whereby rotation of said rotary board causes said fins to move through said slots to momentarily push a playing piece above said playing surface during which time the playing piece may be attracted to said playing piece attractor, and said playing piece rapidly falling below said playing surface as said downwardly extending edge of said fin passes through a slot in the receptacle containing said playing piece.

4,214,751

ADJUSTABLE BUNTING BAT WITH PROTECTIVE SHIELD

John P. Simpson, 36 Winthrop Rd., Brentwood, N.Y. 11717

Filed May 1, 1978, Ser. No. 901,344
Int. Cl.[2] A63B *59/00*
U.S. Cl. 273—26 B **6 Claims**



1. An adjustable standard baseball bat for reducing the length of the bat from its normal length to a reduced length for use as a training device in practicing the art of bunting a baseball, comprising:

a barrel having a cavity extending axially therein,

a handle within said cavity and movable therein from an open position to a closed position in which a substantial portion of said handle is substantially fully inserted within said cavity, and

means for locking said handle within said barrel in either said open or said closed positions,

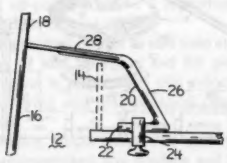
whereby a batter may simulate the catching of a baseball while holding the barrel of said bat when said handle is in a closed position, the shape of the bat having substantially the form of the barrel when the handle is in the closed position.

4,214,752

TABLE TENNIS BALL GUARD

Harold Chanin, 5 Sheffield St., Lake Hiawatha, N.J. 07034

Filed Jul. 6, 1978, Ser. No. 922,304
Int. Cl.[2] A63B *67/04*
U.S. Cl. 273—30 **4 Claims**



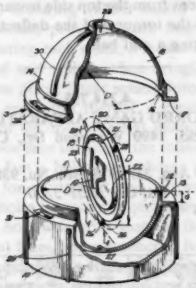
1. A table tennis ball guard, for use in combination with a table-tennis table and a ball-rebounding play-back board, comprising: means defining a table-engageable mount, for replaceably mounting said ball guard onto a table-tennis table; and said guard having first and second substantially planar ball rebound surfaces, and being adapted to extend substantially the width of a standard table tennis table; said table-engaging mount being an elongated substantially planar element and when in use, being on and substantially parallel to the upper surface of a table tennis table; said first rebound surface being attached to and extending upwardly from said mount and defining an acute angle therewith, said second surface being engaged with said first rebound surface in an edge-to-edge relationship and defining an obtuse angle with respect to said first rebound surface; when in use with a table tennis table having a table tennis net attached thereto and a ball play-back board positioned on one end thereof, said guard being mountable adjacent the net on the same side thereof as a player hitting a ball, said first rebound surface adapted to extend upwardly at an angle towards the net to a height of approximately table tennis net height, said second rebound surface adapted to extend from said first rebound surface, over the net and into abutting engagement with the ball play-back board.

4,214,753

TRANSPARENT ARTICLE

Terry M. Haber, Costa Mesa, and Marlin D. Fernandez, Bloomington, both of Calif., assignors to Joseph L. Fernandez, Bloomington, Calif.

Division of Ser. No. 857,297, Dec. 5, 1977, Pat. No. 4,157,805.
This application Aug. 21, 1978, Ser. No. 935,572
Int. Cl.[3] A63B *37/00*
U.S. Cl. 273—59 R **3 Claims**



3. A product composition for a transparent polymer member with an encapsulated element positioned in the member by a holder, comprising:

(a) a transparent polyester resin member having a given index of refraction and a given density;

(b) an opaque element in said member;

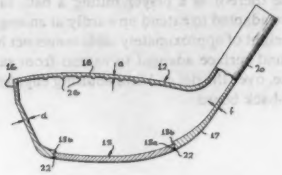
(c) a holder for holding the element in said member, said holder being of thermoplastic material which is mechanically and chemically bonded with said polyester resin and which has the same index of refraction, transparency, Rockwell hardness, specific gravity and surface finishing characteristics as said polyester resin the holder being substantially invisible; and

(d) a symbol on said opaque element defined by an ink comprised of a polyester thermoplastic alloy bonded to a face of said element, the material of said opaque element being mechanically and chemically bonded with the polyester resin of said member such that surface portions of said element free of said ink become swelled slightly from extended contact with said polyester resin so that said symbol appears engraved.

4,214,754
METAL GOLF DRIVER AND METHOD OF MAKING SAME

John Zebelean, Oxnard, Calif., assignor to Pro-Patterns Inc., Ventura, Calif.

Filed Jan. 25, 1978, Ser. No. 872,092
Int. Cl.[2] A63B 53/04
U.S. Cl. 273—167 H 18 Claims



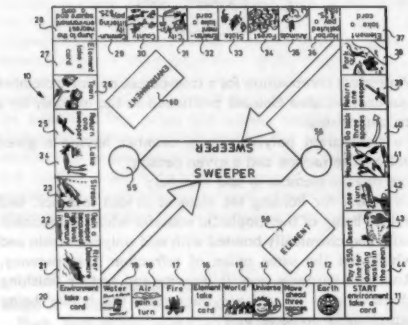
1. A golf driver comprising:

an enclosed all-metallic hollow body of preselected stainless steel shaped in the form of a golf driver head, defining a face side, a bottom, sole-defining side, and top and back sides extending from the upper end of said face side toward the rear end of said bottom side, said head further defining a heel and a hollow neck extending from said body at said heel at a preselected angle, and a toe opposite said heel, the mass of the metal forming said body being distributed so that the back side thickens from the heel toward the toe and from the top side to the sole side, and the toe thickens from the top side toward the sole side, so as to reduce the torque and the deflection of said driver when impacting a golf ball.

4,214,755
BOARD GAME APPARATUS

Peggie A. Wysocki, 1490 Wynwood Dr., Cinnaminson, N.J. 08077

Filed Aug. 31, 1978, Ser. No. 938,732
Int. Cl.[2] A63F 3/00
U.S. Cl. 273—243 5 Claims



1. A board game apparatus, comprising:

a plurality of tokens, each of which represent one of the players;

a multiplicity of playing pieces representing sweepers, which are shaped as brooms and which are initially evenly distributed to each of the players;

a game board having a playing field and a multiplicity of playing spaces formed on said playing field which cooperatively define a continuous, closed path along which said tokens are movable in random increments, said multiplicity of spaces including a starting space, a first group of spaces having illustrations and designations imprinted thereon indicative of an area of environmental concern, a second group of spaces having monetary penalties specified thereon for harms committed to the environment, a third group of spaces having instructions imprinted thereon for selecting a card from a specified stack of cards, a fourth group of spaces having instructions imprinted thereon for selecting a card from another specified stack of cards, and a fifth group of spaces having indicia thereon corresponding to said multiplicity of playing pieces representing sweepers which are shaped as brooms, which spaces are indicative of a penalty or benefit assessed to the player whose token lands on one of the spaces relative to the acquisition or forfeiture of at least one playing piece representing a sweeper;

a stack of element cards associated with said third group of spaces, each of said element cards having indicia thereon representative of a benefit or penalty assessed to the player who picks the card;

a stack of environment cards associated with said fourth group of spaces, each of said environment cards having indicia thereon representative of a benefit or penalty assessed to the player who picks the card;

random number generating means for randomly determining the number of spaces a player's token will be moved during his turn;

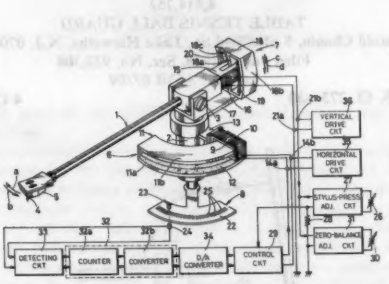
a supply of play money of different denominations, a portion of which is distributed to each of the players; and

a plurality of sweeper receptacles mountable upon said playing field, in which said playing pieces representing sweepers are insertable.

4,214,756
RECORD PLAYER

Yoshimoto Ohmura, Mitaka, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 2, 1979, Ser. No. 26,341
Claims priority, application Japan, Apr. 3, 1978, 53-38960
Int. Cl.[2] G11B 3/10
U.S. Cl. 274—23 R 6 Claims



1. A record player comprising:

a tone arm movable in the horizontal direction and vertical direction with respect to a record disc and carrying a reproduction stylus at one end of said tone arm;

first electro-magnetic means coupled with said tone arm for applying a horizontal force to said tone in an amount

corresponding to the magnitude of a control voltage supplied to said first electro-magnetic means;

detecting means for detecting the horizontal position of said tone arm and for supplying a detecting output which varies as said horizontal position changes;

generating means responsive to said detecting output for generating an outside force voltage, the magnitude of which varies in dependence upon the horizontal position of said tone arm; and

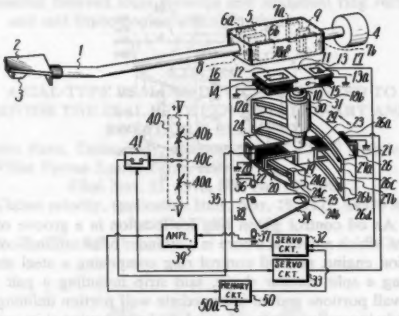
means for supplying said outside force voltage as said control voltage to said first electro-magnetic means, said generating means producing said outside force voltage in a magnitude sufficient, when supplied to said first electro-magnetic means, to apply a horizontal force to said tone arm that effectively cancels the inside force generated when the stylus of said tone arm rides upon a rotating record disc.

4,214,757

TONE ARM ASSEMBLY

Satoshi Kusaka, Tokyo, and Kuninori Shino, Higashimurayama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 8, 1979, Ser. No. 36,993
Claims priority, application Japan, May 8, 1978, 53-54303
Int. Cl.² G11B 3/10
U.S. Cl. 274—23 R **2 Claims**



1. A tone arm assembly comprising:

a tone arm;

a first motor mechanically coupled to said tone arm for moving said tone arm in the horizontal direction with respect to a record disc;

a first motor drive means including a first servo circuit for energizing said first motor in such a manner that said tone arm is moved from an inoperative rest position to an inoperative up-position above a reproducing position of said record disc, or vice versa;

a first detecting means coupled to said tone arm for detecting the velocity of said tone arm and for generating a first electrical output in response to said velocity;

means for supplying said first electrical output to said first servo circuit;

a second detecting means coupled to said tone arm for detecting a predetermined arm position and for generating a second electrical output; and

means for applying said second electrical output to said first servo circuit;

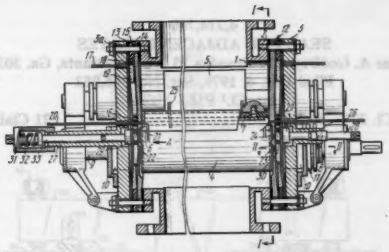
wherein said first motor drive means further includes a biasing circuit for biasing said first servo circuit so as to energize said first motor at a predetermined velocity, and a switch means connected between said biasing circuit and said first servo circuit, said switch means being controlled with said second electrical output derived from said second detecting means so as to shut off a connection between said first servo circuit and said biasing circuit.

4,214,758

FACE SEALER DEVICE FOR ROLLER LOCK GATES

Leonid G. Gorodissky, Dmitrovskoe shosse, 153/43, kv. 106, Moscow, U.S.S.R.; Nikolai T. Romanov, deceased, late of Moscow, U.S.S.R., and by Anastasia I. Romanova, administrator, Bulatnikovsky proezd, 14, korpus 5, kv. 152, Moscow, U.S.S.R.

Filed Mar. 12, 1979, Ser. No. 19,662
Int. Cl.² F16J 15/40, 15/54
U.S. Cl. 277—12 **3 Claims**



1. A face sealer device for a roller lock gate made use of in pressure systems, featuring rubber-coated rollers arranged parallel to each other, provided with bearing journals and adapted for contacting each other; a means for regulating the mutual position of said rollers when bringing the end faces thereof in the same plane; linear sealers forced to each of the rollers along the generatrix thereof; a means for sealing the bearing journals of the rollers; a flat sealing member forced against said common face surface of the rollers, said flat sealing member being in fact a hollow membrane provided with an inlet connection for refrigerant and lubricant to feed in, a number of outlet holes for said refrigerant and said lubricant to deliver from said hollow interior space to the zone of contact with the roller end faces, and a number of holes for said lubricant and said refrigerant to withdraw from said zone; said flat sealing member having its contact portion proper shaped as a bowlike projection running from one face of said linear sealer to the other face thereof while rounding the zone of contact of the rollers, said projection featuring a triangular cross section with a sharp crest which provides for a relatively linear contact of the sealing member with the roller end faces.

4,214,759

SEAL FOR RAILROAD CAR HOPPER DOORS

Donald L. Douty, Franklin Township, Allegheny County, and Robert J. Elgin, Penn Township, Westmoreland County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

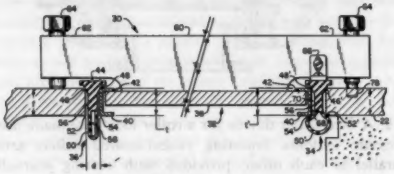
Filed Apr. 23, 1979, Ser. No. 32,053
Int. Cl.² F16J 15/10
U.S. Cl. 277—12 **5 Claims**

1. In a railroad hopper car which includes at least one hopper door and a door frame against which said door closes, said door and said frame providing a surface and a flange for

engaging said surface when the door is closed, the combination therewith of an improved sealing means for said door, said

sealing means comprising a preformed strip of RTV silicone rubber bonded to said surface to be abutted by said flange.

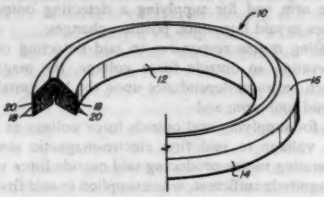
4,214,760
SEAL FOR ADJACENT PLATES
Dwaine A. Godfrey, 210 Brandon Pl., N.W., Atlanta, Ga. 30328
Filed Dec. 4, 1978, Ser. No. 965,952
Int. Cl.[2] F16J *15/46*
U.S. Cl. 277—34.3 **21 Claims**



1. In combination, the sealing arrangement comprising:
a first plate having first and second parallel edges;
a second plate in adjacent closely spaced parallel relationship to the first plate having first and second edges substantially opposite the first and second edges of the first plate;
a flexible seal disposed in the space between the first and second plates having enlarged tapered first end and an inflatable, tubular second end, the first end being in contact with and extending outward beyond the first edges of the first and second plates and the second end being adjacent to and extending outward beyond the second edges of the first and second plates; and
valve means in the seal for inflating the second end of the seal whereby the tube expands into contact with the second edges of the first and second plates thereby forming secondary sealing interfaces and drawing the first end of the seal inward toward the space between the first and second plates to form primary sealing interfaces.

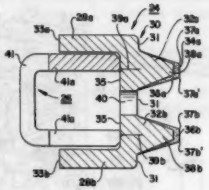
4,214,761
PACKING CONSTRUCTION
Aaron J. Pippert, Houston, Tex., assignor to Utex Industries, Inc., Houston, Tex.
Filed Jul. 31, 1978, Ser. No. 929,665
Int. Cl.[2] F16J *15/10, 15/22*
U.S. Cl. 277—123 **9 Claims**

1. A packing member comprising:
an annular body, at least a portion of which is layered, said layered portion having at least one layer comprised of fabric and another layer comprised of a binder having a fibrous filler generally uniformly disposed therein so as to form a generally homogeneous layer consisting of said



filler and said binder, the fibers of said filler being randomly oriented, said layers being bonded to one another.

4,214,762
ROLLED METAL PISTON RING
Harold E. McCormick, Ballwin; Herbert F. Prasse, Town and Country; William F. Ott, and Donald J. Mayhew, both of St. Louis, all of Mo., assignors to Ramsey Corporation, St. Louis, Mo.
Continuation of Ser. No. 672,752, Apr. 1, 1976, abandoned. This application Aug. 3, 1978, Ser. No. 930,792
Int. Cl.[2] F16J *9/06*
U.S. Cl. 277—138 **9 Claims**



1. An oil control piston ring for location in a groove of a piston which moves in a bore in a cylinder of an internal combustion engine, said oil control ring comprising a steel strip having a split annular shape, said strip including a pair of sidewall portions and an intermediate wall portion defining a radially inwardly opening channel, said ring having at its outer periphery a pair of axially spaced cylindrical surfaces for oil scraping engagement with said cylinder bore, said cylindrical surfaces each being located at the juncture of respective radially outwardly extending portions of said strip, said respective radially outwardly extending portions extending radially outwardly with respect to said intermediate wall portion and forming a pair of axially spaced oil scraping rims, said portions having an inner apex and having confronting inner surfaces which abut, said confronting inner surfaces being in abutting relation at the inner apex and abutting continuously as they extend from said inner apex toward said intermediate wall, said abutting relation existing for at least part of the distance between said inner apex and the intermediate wall, said sidewall portions extending radially inwardly relative to said intermediate wall in a direction opposite from that of said radially outwardly extending portions, and said intermediate wall, said oil scraping rims, and said sidewalls being formed from a single steel strip.

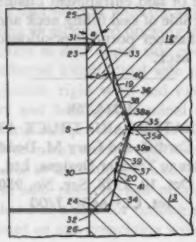
4,214,763
BORE SEAL
Raymond E. Latham, 231 Tamerlaine, Houston, Tex. 77024
Filed Oct. 23, 1978, Ser. No. 953,406
Int. Cl.[2] F16L *23/00*
U.S. Cl. 277—167.5 **11 Claims**

1. An annular bore seal for sealing between connected first

and second coaxially aligned and centrally bored members, each of which is provided with an internal frusto-conical seating surface tapering inwardly from the adjoining ends of said first and second members toward the bores thereof, said seal comprising:

an inner cylindrical surface;

annular end surfaces at opposite ends of said inner surface;



frusto-conical outer sealing surfaces adjacent each of said end surfaces and tapering outwardly therefrom at an angle, with the axis of said seal, in the range of fifteen to twenty degrees;

an outer alignment ring surface midway between said end surfaces defined by the circular intersection of a pair of cones whose axes coincide with said seal axis; and

annular relieved areas between said alignment ring surface and said frusto-conical sealing surfaces.

4,214,764

AXIAL-TYPE SEALING DEVICE ARRANGED TO PROVIDE THE SEAL BETWEEN A STATIONARY AND A ROTATABLE ELEMENT

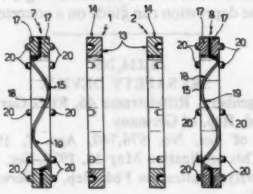
Giulio Fava, Turin, Italy, assignor to RIV - SKF Officine di Villar Perosa S.p.A., Turin, Italy

Filed Nov. 13, 1978, Ser. No. 959,798

Claims priority, application Italy, Nov. 15, 1977, 69570 A/77

Int. Cl.² F16H *15/34*

U.S. Cl. 277—935 D **3 Claims**



1. A sealing device arranged to provide the seal for a fluid, in particular a liquid, between an ambient and the inside of a cavity between a stationary member and a rotating member, comprising

two annular sealing elements, each of which has a plane annular surface substantially orthogonal to the axis of rotation of the rotating member and a pair of cylindrical side surfaces each orthogonal to the adjacent plane annular surface, the cylindrical side surfaces of each of the two sealing elements being axially aligned with and having the same diameters as the corresponding two cylindrical side surfaces of the other sealing element,

a pair of thrust rings of resiliently compressible and deformable material and having transverse end surfaces, each of said thrust rings having a pair of cylindrical side surfaces aligned with and having the same diameters as the two cylindrical side surfaces of the sealing elements and each of the thrust rings being provided with lugs on each of its end faces, which lugs are arranged to enter corresponding cavities of the stationary and rotating members and of said sealing elements, and

at least a pair of metallic annular springs each of which is embedded in a respective thrust ring and is axially corrugated around the periphery thereof in such a way that a part of a first surface of the spring bears on the adjacent sealing element and a part of a second surface of the same spring bears against one of said members.

4,214,765

LOCKABLE DRILL CHUCK

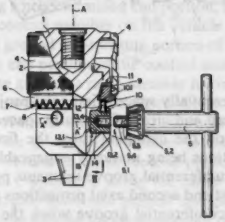
Günter H. Röhm, Heinrich-Röhm-Strasse 50, 7927 Sontheim, Fed. Rep. of Germany

Filed May 18, 1979, Ser. No. 40,125

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1978, 2853045

Int. Cl.² B23B *31/12*

U.S. Cl. 279—1 K **10 Claims**



1. A drill chuck comprising:

a chuck body defining a chuck axis;

a plurality of generally angularly equispaced and radially displaceable jaws on said body;

a tightening ring rotatable on said chuck body about said axis;

means including formations between said jaws, ring, and body for radially displacing said jaws on rotation of said ring on said body about said axis;

an eccentric rotatable in said body about an eccentric axis lying in a plane transverse to said chuck axis and having an eccentric surface spaced from said ring;

a locking member axially displaceable in said body and axially simultaneously engageable in one direction with said ring and in the opposite direction with said eccentric surface; and

means for rotating said eccentric about said eccentric axis between a locking position pressing said member axially against said ring and preventing rotation thereof and a freeing position allowing said ring to rotate on said body.

4,214,766

COLLET

Gerhard Rall, Marbach, and Hermann L. Kastner, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Wilhelm Hainbuch GmbH & Co., Marbach, Fed. Rep. of Germany

Filed Jul. 20, 1978, Ser. No. 926,299

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1977, 2732677

Int. Cl.² B23B *31/20*

U.S. Cl. 279—46 R **30 Claims**

1. A collet, comprising:

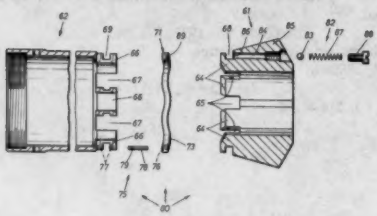
a clamping head having a front side, having interior gripping surfaces in a longitudinal zone of the clamping head for gripping a workpiece, and having an exterior surface in the form of a frustum located at least partially in the same longitudinal zone as the gripping surfaces and diverging toward the front side of the clamping head, the clamping head being divided into individual gripping jaws, at least in the longitudinal zone of the gripping surfaces, by radial-

ly- and axially-extending longitudinal slits circumferentially distributed about the clamping head;

a clamping tube separably couplable with the clamping head and having means on an end of the clamping tube facing away from the clamping head for fastening the clamping tube to an apparatus for use;

elastic means in the longitudinal slits between the gripping jaws of the clamping head; and

means for coupling together the clamping head and the clamping tube positively in the axial direction and releasably in the radial direction, the coupling means comprising circumferentially spaced first axial projections on the clamping head and circumferentially spaced second axial projections on the clamping tube, the first and second axial projections being mutually engageable in claw-like fashion, circumferential groove segments provided in the engaging first and second axial projections and forming a common circumferential groove when the first and second axial projections are mutually engaged, and a coupling ring inserted in the circumferential groove, the coupling ring being divided at at least one circumferential location.



4,214,767

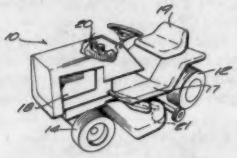
FUEL TANK INCLUDING AIR ENTRAPMENT CHAMBERS

John W. Davies, III, Plymouth, Wis., assignor to Gilson Brothers Company, Plymouth, Wis.

Filed Aug. 21, 1978, Ser. No. 935,611

Int. Cl.[2] B60K *15/02*

U.S. Cl. 280—5 A **7 Claims**



5. A lawn tractor comprising:

a frame;

wheels supporting the frame for movement on the ground;

a gasoline engine drivingly connected to the wheels for driving the wheels; and

a fuel tank connected to the gasoline engine, the fuel tank including a bottom wall, a plurality of side walls integrally connected to said bottom wall, a top wall integrally connected to said side walls, said bottom wall, side walls and top wall defining a reservoir therein, and said top wall including a pair of spaced apart outer peripheral top wall portions, an inner top wall portion spaced from said outer peripheral portions toward said bottom wall, and a pair of inner walls, one of said inner walls joining said inner top wall portion and another of said peripheral top wall portions, a generally cylindrical filling neck centrally located within said inner portion and integrally connected to said inner portion and extending away from said bottom wall and defining an opening to said reservoir, said side walls, peripheral top wall portions, and said inner wall defining at least two separate and independent mutually spaced apart gas entrapment chambers spaced from said filling neck and above said inner wall for trapping gas therein when said tank is filled and for holding fuel when said tank is tipped, one of said entrapment chamber portions positioned on one side of said filling neck and the other of said entrapment chamber portions positioned on another side of said filling neck.

4,214,768

SHIELD FOR SKATEBOARD TRUCK AXLE HOUSING

David A. Dominy, Cardiff, and Gary M. Dodds, Encinitas, both of Calif., assignors to Tracker Designs, Ltd, San Diego, Calif.

Filed Oct. 10, 1978, Ser. No. 950,271

Int. Cl.[2] A63C *3/00*

U.S. Cl. 280—809 **7 Claims**

1. In a truck for a skateboard or the like with a central depending axle housing having extending to each side thereof an axle on which a wheel is disposed and secured thereon by a nut, means to protect the bottom of said housing, comprising:

(a) a shield covering the bottom of said axle housing substantially from end to end thereof,

(b) means securing said shield in place on said housing, and

(c) the lower surface of said shield having a central depression so the depression can guide on a conrete edge surface.

4,214,769

SKI SAFETY DEVICE

Egidius Brangenberg, Riffelstrasse 46, 8100 Garmisch-Partenkirchen, Fed. Rep. of Germany

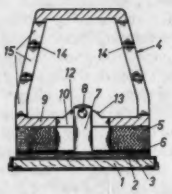
Continuation of Ser. No. 674,740, Apr. 7, 1976, Pat No. 4,135,729. This application May 11, 1978, Ser. No. 905,369

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1975, 2516194

The portion of the term of this patent subsequent to Jan. 23, 1996, has been disclaimed.

Int. Cl.[2] A63C *5/06*

U.S. Cl. 280—817 **2 Claims**



1. A device for preventing unintentional crossing of skis during skiing, comprising a support mountable on an upper surface of a ski; a frame above said support and provided with

a bottom wall having a lower side facing said support and with an upper side; a member of elastically compressible material having an upper and a lower surface and being interposed between said support and said bottom wall, one of the upper and lower surfaces of said member being fixedly attached to one of said bottom wall and said support and the other of said upper and lower surfaces bearing upon the other of said bottom wall and said support; and means for detachably connecting said frame with said support with the aid of only one hand of a user, comprising an elongated opening in said bottom wall and a pair of pockets in said upper side each extending outwardly from a different longitudinal side of said opening, a non-turnable projection rigid with and extending upwardly from said support and having a terminal section extending through said opening and provided with two portions which project from said terminal section opposite one another and substantially parallel to said support and which are each receivable in one of said pockets, and portions of said frame engageable by a hand of a user for turning said frame relative to said support about an axis coinciding with the elongation of said projection for thereby effecting entry of said portions into the respective pockets in response to turning of the frame, and for effecting removal of the portions from said pockets in response to further turning of the frame, whereby to connect said frame to and disconnect it from said support, respectively, with the help of only one hand of the user.

4,214,770

SKI POLE WITH WIND AND SUN SHIELD

Bonnie G. Agins, 221 Oakcrest Rd., San Anselmo, Calif. 94960

Filed Apr. 25, 1979, Ser. No. 33,108
Int. Cl.[2] A63C *11/22*
U.S. Cl. 280—819 **6 Claims**

1. In a ski pole having a hollow handle, a wind and sun shield comprising;

an open end on said handle;

a guideway in said handle disposed along the axis thereof;

a rod slidable in said guideway;

a plurality of radial ribs pivoted at the end of said rod; and

a sheet fastened over said ribs; to form an umbrella type structure; means for moving said rod axially to an extended position protruding from said panel;

said ribs being free to pivot between a fully open radial position and a fully closed position along the axis of said rod when said rod is in said extended position;

said ribs and sheet being receivable in the open end of said handle when in said fully closed position.

4,214,771

COUPLING DEVICE

Lonnie L. Mason, Visalia, Calif., assignor to Vernon T. Mullican, Tulare, Calif.

Filed Nov. 13, 1978, Ser. No. 959,578
Int. Cl.[3] B60D *1/00*
U.S. Cl. 280—402 **11 Claims**

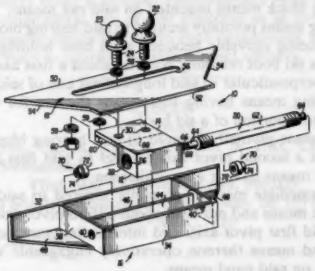
1. A device for raising from ground engagement a ground transporting portion of a vehicle to be towed while converting to an attitude for towing, the device comprising a rigid control member having a predetermined end portion; means for rigidly mounting the control member on the vehicle in fixed position relative to said ground transporting portion of the vehicle to be raised with the end portion of the control member disposed in proximity to the ground; a ramp member having opposite ends; and means for mounting the ramp member on a towing vehicle for movement from an inclined attitude, with an opposite end supported by the ground, in response to relative movement between said vehicles to cause the end portion of the control member to move upwardly along the ramp member to raise from ground engagement said ground transporting portion of the vehicle and to elevate said opposite end of the ramp member.

4,214,772

LATERALLY ADJUSTABLE TRAILER HITCH SYSTEM

Herbert F. Carr, 515 Pine Ave., and Robert W. Cooper, Marley Mill Rd., both of Ozark, Ala. 36360

Continuation-in-part of Ser. No. 880,526, Feb. 23, 1978, abandoned. This application Jul. 27, 1978, Ser. No. 928,755
Int. Cl.[2] B60D *1/06*
U.S. Cl. 280—415 A **17 Claims**



1. A vehicular hitch mounted on a towing vehicle comprising:

a trailer coupling element for selectively engaging and disengaging companion coupling elements on towed vehicles;

a main frame member for mounting and securing said vehicular hitch to the towing vehicle, said main frame member comprising end walls, a front wall, and a back wall, all of which extend substantially from a bottom plate to a top plate of said main frame member, said top plate having an aperture therein to accommodate said trailer coupling element;

a fixed guide member mounted within said main frame member intermediate said front and back walls, thereby defin-

ing a rearward track region between said back wall and said guide member and a frontward track region between said front wall and said guide member, said guide member extending from said bottom plate to near said top plate, thereby defining a gap between said guide member and said top plate;

carriage means contained within said rearward track region of said main frame member, said carriage means also having a flat plate affixed thereto, said flat plate extending approximately horizontally, when said towing vehicle is on flat pavement, through said gap and over said guide member so that said flat plate protrudes into said frontward track region, said flat plate having a vertical hole to accommodate said trailer coupling element at a vertical orientation perpendicular to said flat plate;

drive means movably mounted on said main frame member within said rearward track region for engaging said carriage means and imparting lateral motion to the carriage means and trailer coupling element mounted thereon, thereby causing the trailer coupling element to be horizontally moved along said main frame member.

4,214,773

HEEL HOLDER FOR RELEASE SKI BINDING

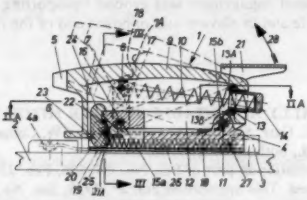
Heinz Wittmann, Vienna, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Nov. 17, 1978, Ser. No. 961,484

Claims priority, application Austria, Nov. 18, 1977, 8283/77

Int. Cl.[2] A63G *9/08*

U.S. Cl. 280—631 **10 Claims**



1. A heel holder of a safety ski binding, comprising:

elongated rail means mounted on a ski;

bearing block means mounted on said rail means;

housing means pivotally secured to said bearing block means and being movable between a ski boot holding position and a ski boot releasing position about a first axis extending perpendicular to said longitudinal axis of said ski, said housing means having first means thereon for engaging the heel portion of a ski boot;

pawl means pivotally secured to said bearing block means about a second pivot axis parallel to said first axis, said pawl means having a hook thereon;

an intermediate member pivotally secured to said bearing block means and movable about a third pivot axis parallel to said first pivot axis, said intermediate member having second means thereon operatively engageable with said hook on said pawl means;

first resilient means for urging said hook on said pawl means into engagement with said second means on said intermediate member;

second resilient means for urging said intermediate member away from said pawl means about said third pivot axis in response to a release of the engagement between said hook on said pawl means and said intermediate member;

control means, including a release spring, for controlling the pivotal movement of said housing means about said first pivot axis in response to external forces applied thereto;

connecting means for operatively connecting said intermediate member to said control means for facilitating a simultaneous pivotal movement of said intermediate member and housing means about said first and third pivot axes in response to a release of the engagement between said hook on said pawl means and said intermediate member, said connecting means also permitting a pivotal movement of said housing means about said first pivot axis relative to said intermediate member in response to an external force which is sufficient to overcome said release spring and when said intermediate member remains engaged with said pawl means; and

manually operable release lever means pivotally secured to said bearing block means for manually effecting a pivoting of said pawl means against the force of said first resilient means to unlatch said hook from engagement with said intermediate member to permit said second resilient means to effect the simultaneous movement of said intermediate member and said housing means to said boot releasing position.

4,214,774

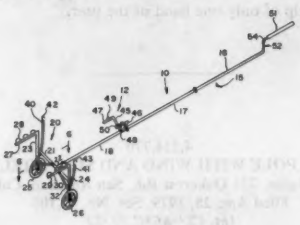
DISASSEMBLABLE BOAT CARRIER AND LAUNCHER

Ronald P. Kluge, 5902 Bustleton Ave., Philadelphia, Pa. 19149, assignor to Ronald P. Kluge, Philadelphia and Herman F. Spirk, Prospect Park, both of, Pa.

Filed Mar. 16, 1979, Ser. No. 21,286

Int. Cl.[3] B60P *3/10*

U.S. Cl. 280—652 **8 Claims**



1. A readily disassemblable manually maneuverable boat carrier, comprising:

a longitudinal tongue member comprised of a plurality of sections releasably fastened together, said longitudinal tongue member being provided with a handle at its forward end;

a transverse assembly, said transverse assembly having a transverse member with a connecting means located centrally thereon for releasably connecting with the rear of said longitudinal tongue member, a support member pivotally connected intermediate the ends thereof to each end of said transverse member, each of said support members being provided with a wheel at or near its lower end and a boat hull support means at its upper end, adjustable bracket means lockable in a position for holding said support members in a substantially vertical position during use in transporting a boat and allowing pivoting of said support members substantially parallel to said transverse member when not engaged in said use; and

support means for the forward section of the boat hull mounted on said longitudinal tongue member between said handle and the rear end of said tongue member.

4,214,775

SUSPENSION ASSEMBLIES FOR VEHICLES

Philip A. Taft, Solihull, England, assignor to Girling Limited, Birmingham, England

Filed Sep. 28, 1978, Ser. No. 946,583

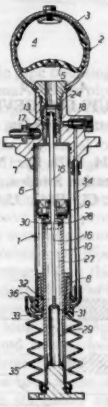
Claims priority, application United Kingdom, Oct. 8, 1977, 41990/77

Int. Cl.[2] B60G *11/30*

U.S. Cl. 280—708 **4 Claims**

1. A vehicle hydro-pneumatic suspension assembly compris-

ing an hydraulic suspension unit of the self-levelling type in combination with a pressure chamber containing air or other gas for supporting the load on a wheel, wherein said unit comprises a cylinder in communication with said pressure chamber, a closure for one end of said cylinder, a piston rod assembly comprising a piston adapted to work in said cylinder, and a piston-rod carrying said piston and adapted to work through said closure, an inlet port for connection to a source of high pressure liquid, an outlet port for connection to a reservoir for liquid, a spool valve responsive to the position of said piston rod assembly for controlling communication between said inlet port and said pressure chamber and between said pressure chamber and said outlet port to maintain the length of the unit at a predetermined value irrespective of the load, and damping means to delay response of said spool valve to movement of said rod assembly, wherein said spool valve comprises



a spool, and said cylinder has a bore in which said spool works, and wherein an axial rod located in said cylinder has a first end which carries said spool and a second end, spaced abutments being provided at said second end of said axial rod and at an end of said piston rod remote from said piston, retainers being located in abutment with said abutments, and a spring housed within said piston rod being engaged at opposite ends between said retainers, said spring being caged when said spool is in a neutral position in which both said ports are closed, extension of the unit from said neutral position uncaging the end of said spring which is adjacent to said spool so that said spool can be moved by said axial rod in a corresponding direction to open said outlet port in the event of a decrease in loading, and contraction of said unit from said neutral position uncaging the end of said spring remote from said spool so that said spool can be moved by said axial rod in a corresponding direction to open said inlet port in the event of an increase in loading.

4,214,776

PICK UP CONTAINER FOR THREE POINT TRACTOR HITCH

William W. Nurse, 10806 Harley Rd., Lorton, Va. 22079

Filed Oct. 10, 1978, Ser. No. 950,166
Int. Cl.² B60P *1/02*
U.S. Cl. 280—760 **10 Claims**

1. A transport platform for attachment to a tractor or the like comprising:

(a) a horizontal support frame having a front and a rear and comprised of outer and inner frame members;

(b) said outer frame members being joined together to form a rectangle with said inner frame members positioned within said rectangle;

(c) said outer frame member being equal and coextensive in height;

(d) a pair of vertical frame members having a top and a bottom portion with said bottom portion of said vertical frame members being securedly attached to the front of said horizontal support frame;

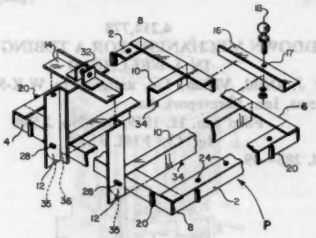
(e) said pair of said vertical frame members being coextensive and having a portion extending below said bottom portion of said outer frame members;

(f) said outer and inner frame members having inner and outer sides, and a top and bottom portion;

(g) said bottom portion of said vertical frame members having hitch engaging means positioned above said portion extending below said bottom portion of said outer frame members;

(h) said top portion of said vertical support frame having hitch engaging means;

(i) said inner frame members including a substantially parallel pair extending from said front to said rear of said hori-



zontal support frame and having their bottom portions extending below the bottom portions of said outer frame members a distance equal to said portion of said pair of said vertical frame members extending below said bottom of said outer frame members thereby providing runners to support said platform;

(j) said horizontal support frame serving as a load support means;

(k) said pair of said vertical frame members and said pair of inner frame members being aligned from front to rear; and,

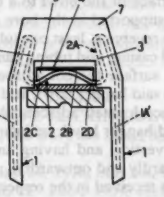
(l) said pair of said vertical and said pair of said inner frame members being positioned symmetrically with respect to the longitudinal axis of said platform so as to provide a substantial distance between each cooperating member of said pairs to provide a stable ground support.

4,214,777

SKI BRAKE

Erwin Krob, Vienna, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed May 11, 1978, Ser. No. 905,023
Claims priority, application Austria, May 18, 1977, 3559/77
Int. Cl.² A63C *7/10*
U.S. Cl. 280—605 **7 Claims**



1. In a ski brake comprising a holding plate, at least one braking member and resilient means operatively connected to

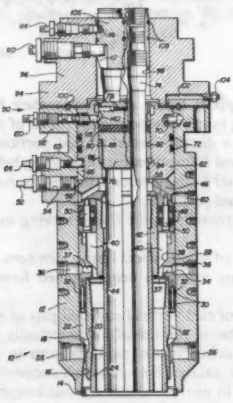
said braking member for urging said braking member into a braking position and resisting movement of said braking member into a downhill retracted position, the improvement comprising wherein said resilient means comprises a spring wire having plural segments which in a relaxed position of the spring wire lie substantially in one plane, wherein said braking member has a planar construction coplanar with said spring wire of said resilient means, and wherein said holding plate has a radially elongated bearing slot therein, the elongated axis of said bearing slot being upwardly inclined relative to an upper surface of said ski and lying in said plane of said spring wire, one segment of said spring wire having coplanar bent portions being received in said bearing slot, said coplanar relationship of said bent portions and said elongated axis of said bearing slot preventing rotary movement of said spring wire in said bearing slot to thereby effect a torsioning of said wire in response to a movement of said braking member to said retracted position.

4,214,778

HOLDDOWN MECHANISM FOR A TUBING HANGER IN A WELLHEAD

Robert J. Diehl, Vivian, La., assignor to W-K-M Wellhead Systems, Inc., Shreveport, La.

Filed Jan. 11, 1979, Ser. No. 2,508
Int. Cl.[2] F16L *35/00*
U.S. Cl. 285—39 **10 Claims**



1. A wellhead assembly comprising:

a head member adapted to support at least one well casing, said head member having an axial bore and a plurality of spaced apart threaded passages extending generally horizontally from the outer surface of said head member to the bore thereof;

a hanger bowl supported in the bore of said head member and having a plurality of generally horizontal passages axially aligned with the respective passages of said head member, the passages of said hanger bowl extending from the outside surface of the bowl to a bore thereof;

a tubing hanger supported in the bore of said hanger bowl and adapted to receive at least one tubing string extending within the well casing, said tubing hanger having a groove on the outside surface thereof adjacent the inner ends of the passages in said hanger bowl, said groove presenting a camming surface located adjacent the inner ends of the passages in said hanger bowl, said camming surface being inclined from vertical and having an orientation to face generally upwardly and outwardly;

a plurality of pins received in the respective passages of said hanger bowl for axial movement therein, each pin having an outer end and an inner end providing a tapered tip extending at least partially into said groove and acting against said camming surface in camming interaction therewith to urge said tubing hanger downwardly in camming fashion;

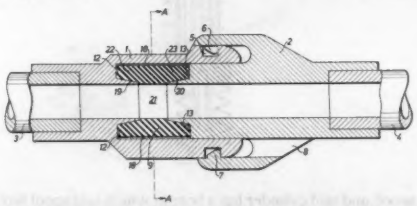
a plurality of screw elements received in the respective passages of said head member for threaded axial movement therein, said screw elements being axially aligned with the respective pins and being accessible from the exterior of said head member to effect threaded advancement of the screw elements into the head member and against the outer ends of said pins to force said tapered tips of the pins at least partially into said groove and against said camming surface to hold down said tubing hanger.

4,214,779

COUPLING DEVICE

Ingvar E. Losell, Staffanstorp, Sweden, assignor to Gambro AB, Sweden

Filed Feb. 24, 1978, Ser. No. 880,774
Claims priority, application Sweden, Mar. 7, 1977, 7702496
Int. Cl.[2] F16L *35/00*
U.S. Cl. 285—93 **13 Claims**



1. A coupling device for joining together two fluid conduits and for providing fluid access to the fluid in the fluid conduits, said coupling device comprising:

a first coupling member adapted to be connected to one of said fluid conduits;

a second coupling member adapted to be connected to the other of said fluid conduits, said first and second coupling members being adapted to be connected together to define an axial fluid passage through said first and second coupling members between said two fluid conduits;

an elastic member having an axial fluid opening therethrough interposed between said first and second coupling members, said axial fluid opening of said elastic member being axially aligned with said axial fluid passage defined by said first and second coupling members;

connecting means for connecting said first and second coupling members together to axially compress said elastic member between said first and second coupling members to seal said axial fluid passage without compressing said elastic member transversely of the axial direction; at least one of said first and second coupling members including an overlapping wall section overlappping said elastic member, and an opening defined in said overlapping wall section to provide access to said elastic member; into engagement with said overlapping wall section and in line with the opening in said overlapping wall section and

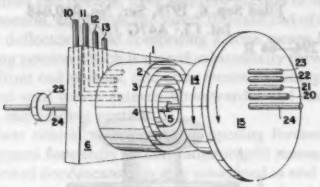
at least a portion of the wall of said elastic member in line with the opening in said overlapping wall section, being resealably penetrable to provide selective fluid communication with the fluid in said fluid conduits through said portion of the wall of said elastic member.

4,214,780

ROTATABLE PIPE COUPLING STRUCTURE

George A. Grace, 35 Greenbrae Circuit, Apt. 103, Scarborough, Ontario, Canada (M1H 1P8)

Filed Aug. 25, 1977, Ser. No. 828,007
Claims priority, application Canada, May 20, 1977, 278932
Int. Cl.[2] F16L *39/04*
U.S. Cl. 285—134 16 Claims



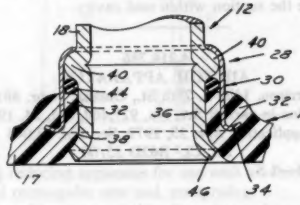
1. A rotatable multiple pipe coupling structure comprising a combination of a stationary outer pipe and a rotatable outer pipe rotatably sealed together at the proximal end surfaces thereof by means of a labyrinth seal, said outer pipes being rotatably coupled at the proximal outer end wall surfaces thereof with an annular hugger ring; at least one combination of a stationary inner pipe and a rotatable inner pipe rotatably sealed together at the proximal end surfaces thereof by forming at least one annular groove in the proximal end surface of one of the inner pipes and a matching annular groove in the proximal end surface of the other inner pipe and by slidably disposing an annular sealing ring within the annular cavity formed with the grooves, the combination of the stationary inner pipe and the rotatable inner pipe having a uniform transverse cross-section over the whole longitudinal length of the combination; said stationary outer and inner pipes being secured with a stationary wall at the distal ends thereof and the rotatable outer and inner pipes being secured at the distal ends thereof with a rotatable wall; and the stationary and rotatable walls being provided therethrough with at least one opening communicating with each of the passages formed with the pipes.

4,214,781

PIPE JOINT AND METHOD OF ASSEMBLY

A. David Joseph, North Muskegon, Mich., assignor to Sealed Power Corporation, Muskegon, Mich.

Division of Ser. No. 882,269, Feb. 28, 1978, Pat. No. 4,129,503.
This application Sep. 5, 1978, Ser. No. 939,418
Int. Cl.[2] F16L *41/00;* B23P *3/00, 25/00*
U.S. Cl. 285—222 4 Claims



1. A pipe joint comprising a first member of molded plastic material having an aperture, a pipe having an end received into said aperture and a circumferential rib formed on an outer surface spaced from said first member, annular resilient sealing means disposed between said rib and said first member surrounding said pipe end, and a metal eyelet having one end molded into said first member and a second end rolled over said rib to capture said resilient sealing means in compression between said rib and said first member.

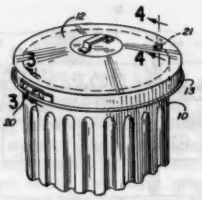
3. A method of forming an air-tight metal-to-plastic pipe joint comprising the steps of: (a) forming a molded plastic member having a generally cylindrical aperture and a metal eyelet having a first end molded therein and a second end extending from said member surrounding said aperture, (b) providing a metal pipe having a substantially cylindrical pipe end and a circumferential rib formed on an outer surface of said pipe spaced from said pipe end, (c) placing an annular resilient sealing ring over said pipe end, (d) inserting said pipe end into said aperture, and (e) forming said second end of said eyelet over said rib to compress said sealing ring between said rib and said plastic member.

4,214,782

COVER LATCH

Bernard Boyer, 17 Fulton Ave., Waukegan, Ill. 60085

Filed Jan. 2, 1979, Ser. No. 87
Int. Cl.[2] B65D *45/22;* E05C *19/06*
U.S. Cl. 292—87 3 Claims



1. A releasable latch means for retaining a removable cover on a container of the type having an outwardly turned rim on the uppermost edge thereof and where the cover is of the type having a depending circumferential flange extending downwardly over the outwardly turned rim, said latch means comprising a stop element adapted to extend inwardly from said flange and engage the lower edge of said rim when the cover is moved upwardly, resilient latch means adapted to be secured to said flange in an area diametrically opposite said stop element, said latch means having a resilient latch arm adapted to extend longitudinally along the outer surface of said flange generally parallel to said flange and to being secured at one end to said flange and being provided at a point spaced from said one end with a latch element extending inwardly through said flange adapted to engage the lower edge of the rim of the container when the cover is moved upwardly and prevent accidental removal of said cover, said latch element lying in a vertical plane which is generally perpendicular to the plane of said latch arm and having an upper horizontal edge with a lower edge curved downwardly from the inner end of said latch element and outwardly to the longitudinally extending portion of said latch arm to provide a camming surface for contacting the surface of said rim and automatically moving said latch element outwardly over said rim into latching position when said cover is moved downwardly into closed position on the upper end of said container, and means associated with said resilient latch arm adapted for manually moving said latch arm outwardly in a horizontal plane away from said rim in order to move said latch element out of engagement with said rim when said cover is moved upwardly.

4,214,783

POSITIVE LOCKING DEVICE

Arthur V. Boegeman, 902 Del Paso Blvd., Space 95, Sacramento, Calif. 95815

Filed May 24, 1978, Ser. No. 908,950
Int. Cl.[2] E05C *1/04, 13/02*
U.S. Cl. 292—150 1 Claim

1. A locking device adapted for use with lightweight structures and doors, comprising:

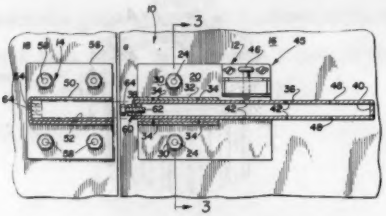
a bar-locking assembly having a first back plate arranged to be mounted to the outer side of a structure; and

a first mounting plate arranged to be mounted to the inner locking side of the structure;

a bar-support sleeve affixed to said mounting plate, said bar-support sleeve including a pair of aligned holes therein, and said bar including a pair of aligned holes therein, whereby said holes of said sleeve and said holes of said bar are in respective alignment with each other when said bar is in a locked position;

a slidable, elongated, locking-bar member slidably supported in said support sleeve, said bar member including a plurality of pairs of enlarged aligned holes adjacent one end thereof;

an adjusting-head means mounted to said elongated bar to extend the length of said bar, said head means comprising a bolt member threaded to one end of said bar and having an engaging head formed thereon;



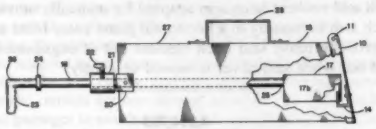
a bar-receiving frame section, including a second back-plate member adapted to be mounted to the outer side of a structure, and a second mounting plate adapted to be mounted to the inner locking side of the structure;

a keeper-sleeve member affixed and positioned on said second mounting plate in longitudinal alignment with said bar, said keeper having an open end to receive said bar and an oppositely disposed closed end defined by a wall, to limit the movement of said bar for engagement with said adjustable head means;

means comprising a plurality of bolts having tamperproof heads formed thereon, for mounting said plates to said structure, said heads being positioned on the outside of said structure;

a releasable-latching means mounted to said first mounting plate and adapted to be received into said selected enlarged pair of holes when said locking bar is in a locked position, said releasable-latching means including a releasable pin to engage said enlarged holes in said bar.

4,214,784
ASH REMOVER
Carl E. Rogalski, 40 Heights Rd., Stratham, N.H. 03885
Filed Apr. 27, 1979, Ser. No. 34,175
Int. Cl.[2] F23J *1/04*
U.S. Cl. 294—55 **7 Claims**



1. An ash remover comprising:

(a) a main body for carrying ashes;

(b) a cover movably connected to the main body;

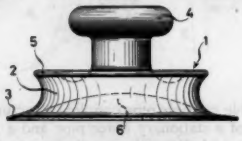
(c) a bracket secured to the cover; and,

(d) an ash rake comprising:

(1) a handle which movably passes into the main body;

(2) rake means fastened at one end of said handle for raking ashes into said body and also for engaging said bracket to hold said cover in a closed position.

4,214,785
INTEGRAL MANIPULATOR, IN PARTICULAR FOR GLASS PANES, PLATES OR METAL SHEETS
Eberhard Broch, Solingen, Fed. Rep. of Germany, assignor to Josef Bohle, Solingen, Fed. Rep. of Germany
Filed Sep. 6, 1978, Ser. No. 940,048
Int. Cl.[2] A47G *35/00*
U.S. Cl. 294—64 R **3 Claims**



1. An integral manipulator for engaging planar or slightly curved smooth surfaces of articles such as glass panes, plates, metal sheets or the like, comprising:

(a) a base member of resilient material and comprising

(1) a cavity surrounded by an annular suction edge for engaging said surface of said article, said cavity and annular suction edge being at one side of said base member;

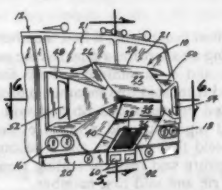
(2) an annular gripping edge spaced from said annular suction edge, said annular gripping edge being at the side of said base member opposite said one side thereof; and

(3) an intermediate annular section disposed between said annular suction and gripping edges, the circumference of said intermediate annular section being less than that of said annular gripping edge forming an undercut at the side of said annular gripping edge facing said annular suction edge; and

(b) a handle mounted on said opposite side of said base member;

(c) whereby said manipulator may be released from an article surface by manually engaging a portion of the undercut surface adjacent said annular gripping edge and pressing a portion of said annular gripping edge in a direction away from said article surface to draw a portion of said annular suction edge away from said article surface to release the suction within said cavity.

4,214,786
AIR FOIL APPARATUS
D. Jon Morrison, 1402 S. 78th St., Omaha, Nebr. 68124
Continuation-in-part of Ser. No. 927,469, Jul. 24, 1978. This application Apr. 25, 1979, Ser. No. 33,046
Int. Cl.[2] B62D *35/00*
U.S. Cl. 296—1 S **10 Claims**



1. In combination,

a cab-over-engine type vehicle including a cab having a forwardly presented front end portion, opposite side portions and a roof portion, said front end portion having a radiator grill means mounted therein at the lower central portion thereof, said front end portion having a windshield mounted therein at the upper end thereof,

an air deflector means mounted on said vehicle forwardly of said front end portion for deflecting air around the sides of said front end portion, over said roof portion of said front end portion, and below the lower forward end of said cab,

said air deflector means comprising a cone means having a leading portion which is spaced substantially forwardly of said front end portion, said cone means including a lower central wall which extends downwardly and rearwardly from said leading portion,

said lower central wall having an opening formed therein positioned forwardly of said radiator grill means,

a perforated door means movably positioned in said opening, said door means being pivotally movable about its upper end, front first to second positions with respect to said lower central wall,

said door means normally being in said second position when the vehicle is not moving,

said door means, when in its said second position, dwelling in substantially a vertical plane so that the lower end thereof is spaced forwardly of said opening to permit a person to enter said opening to service the vehicle,

said door means extending downwardly and rearwardly from its upper end when in its first position to enhance the deflection of air downwardly from said leading portion, the perforations in said door permitting some of the air passing over said door means to pass therethrough towards said radiator grill means,

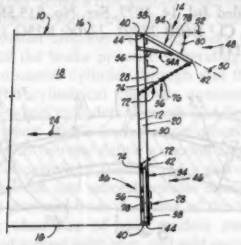
said door means normally being positioned in said second position until sufficient wind force is encountered to move said door means to its said first position.

4,214,787

DRAG REDUCING APPARATUS

Frank Chain, Rte. 1, Box 40, Oakwood, Okla. 73658

Filed Dec. 7, 1977, Ser. No. 858,113
Int. Cl.² B62D *35/00*
U.S. Cl. 296—1 S **12 Claims**



1. Drag reducing apparatus for use with a vehicle having a substantial rectangular rear end, comprising:

a trim panel having a panel leading edge and a panel trailing edge, the panel leading edge pivotally connected along and coterminous with the trailing edge of the one side of the vehicle, the trim panel positioned to extend rearwardly of said vehicle so that the panel trailing edge is positioned rearwardly of the vehicle; and

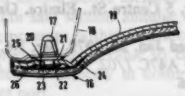
control means connected between the rear end of the vehicle and the trim panel for maintaining the trim panel in an operating position in which a forward projection of the plane tangent to the panel trailing edge intersects the rearward projection of the panel within about 30 degrees and rearwardly to the vehicle rear end.

4,214,788

LINING PART FOR THE PASSENGER COMPARTMENT OF AN AUTOMOBILE

Rainer Srock, Leonberg, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Del.X

Continuation-in-part of Ser. No. 923,229, Jul. 10, 1978. This application Aug. 8, 1978, Ser. No. 931,968
Int. Cl.² B62D *25/00*
U.S. Cl. 296—39 R **8 Claims**



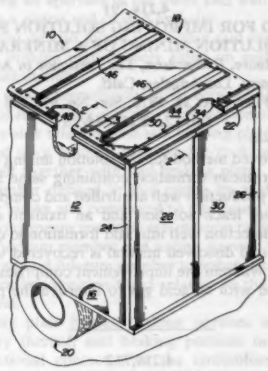
1. A lining part for a passenger compartment of an automobile comprising a rigid support layer, a foam padding layer, a thin flexible covering element covering the padding, and tolerance-compensating studs for securing the lining part to a vehicle body member, said studs being displaceable disposed on the support independent of the foam layer, wherein said foam padding layer is separated from said support layer in a manner forming hollow areas, said support layer being provided with openings communicating with a respective hollow area, and wherein said studs extend from a first end retained within said hollow areas through said openings to a second end extending from said support layer.

4,214,789

TRAILER CONTAINER REAR HEADER

Sol Katz, Meadowbrook; Josef Bertsch, Mohnton, and Howard J. Yurgevich, Levittown, all of Pa., assignors to Strick Corporation, Ft. Washington, Pa.

Filed Apr. 10, 1978, Ser. No. 894,794
Int. Cl.² B62D *27/02*
U.S. Cl. 296—183 **9 Claims**



1. A container adapted to be used for transporting goods comprising side walls extending upwardly from a bottom wall, corner posts at one end of said side walls, at least one door closing said one end, a rear header supported by said corner posts, said rear header having a horizontally disposed bottom surface at an elevation corresponding to the surface at the upper end of said corner posts, said header having a horizontally disposed flange adjacent said bottom surface of the

header, a roof, a rear edge of said roof being supported by said flange, said header having a portion extending upwardly and rearwardly from said one edge of said roof, said roof having reinforcements on the upper surface thereof, the side edges of said roof being secured to the top surface of discrete side rails, the top surface of each side rail being substantially coextensive with the top surface at the upper end of said corner posts, and the vertical height from the container floor to said rear header bottom surface being substantially the same as the height from said container floor to said roof.

4,214,790

ORTHOPEDIC RECLINING CHAIR

Walter P. Sieber, 5 Centre St., Elmira, Ontario, Canada (N3B 2T6)

Filed Jan. 25, 1979, Ser. No. 6,455
Int. Cl.[2] A47C *1/02*; A61F *5/00*; A61H *1/02*
U.S. Cl. 297—326 **7 Claims**

1. An orthopedic reclining chair comprising a seating unit having a back rest portion and a seat portion at a substantial angle to the back rest portion, a frame supporting said seating unit for movement between a substantially upright position and a traction position in which the seat portion is maintained at a substantial angle to the back rest portion and the body of a user would be substantially inverted with the torso inclined at an angle of at least 135° to the vertical, reclining mechanism acting between said seating unit and said frame for moving the seating unit between said positions, and a lap belt extending from said seat portion and disposed to support the thighs of a user substantially parallel to said seat portion when the chair is in said traction position.

4,214,791

METHOD FOR IMPROVING SOLUTION FLOW IN SOLUTION MINING OF A MINERAL

Thomas F. Moore, Richardson, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 22, 1978, Ser. No. 972,293
Int. Cl.[3] E21B *43/28*
U.S. Cl. 299—4 **6 Claims**

1. An improved method for the solution mining of a mineral from a subterranean formation containing same in which an injection and production well are drilled and completed within said formation, leach solution and an oxidant are injected through said injection well into said formation to dissolve said mineral, and said dissolved mineral is recovered via said production well, wherein the improvement comprises pretreating said formation with an acid gas to improve the permeability thereof.

4,214,792

WHEEL ADAPTER

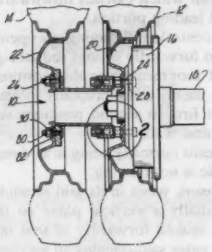
Robert L. Hardwicke, 929 Portsmouth, and John H. Ansteth, 1844 Thunderbird, both of Troy, Mich. 48084

Filed Jul. 10, 1978, Ser. No. 922,980
Int. Cl.[2] B67D *5/22*
U.S. Cl. 301—36 R **9 Claims**

8. For use in combination with a vehicle having an axle with a hub at at least one axial end, said hub having an axis of rotation, said hub having a plurality of axially outwardly extending circumferentially spaced threaded studs for attaching a wheel to the hub, a wheel adapter for securing two substantially identical wheel rims to one hub, each wheel rim having a plurality of mounting holes formed therethrough and which register with the threaded studs, said wheel adapter comprising:

an elongated housing having a first axial end and a second axial end, said housing having a plurality of tubular members at said first axial end;

a plurality of nuts, each nut being adapted to threadably engage one of said threaded studs to thereby secure said first wheel rim to said hub, each nut including an outwardly extending cylindrical portion, said cylindrical portion being axially, slidably receivable in a first end of one of said plurality of tubular members;



a plurality of bolts, each bolt being insertable through a second end of each tubular member, each of said bolts threadably engaging a threaded bore in said cylindrical bore of each nut to thereby secure said housing to said nut; and

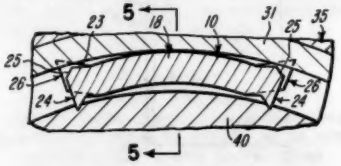
means for securing a second wheel rim to said second axial end of said housing, said securing means including means for coaxially aligning said second wheel rim with the axis of rotation of said hub.

4,214,793

CONNECTOR AND BEARING DEVICES

Robert J. Gargrave, 4717 James Hill Rd., Dayton, Ohio 45425

Filed Jul. 14, 1977, Ser. No. 815,558
Int. Cl.[2] B60B *27/02, 27/06*; B25G *3/28*
U.S. Cl. 301—111 **25 Claims**



1. Apparatus for insertion between adjacent facing surface portions of separate bodies to assist in establishing a required relationship of said bodies, comprising a device including a plate segment one end of which constitutes a leading end first inserted in the application thereof between adjacent facing surface portions of separate bodies and an opposite end of which constitutes a trailing end, said segment having its remote outer faces between said leading and trailing ends adapted for respective contact with the separate bodies between which said segment is applied, side edges of said segment which extend between said leading and trailing ends being each inclusive of portions which define a series of teeth constructed to produce in the application of said segment a pressured flow of material, in its path, of the surface of at least one of the separate

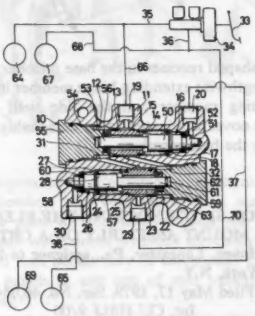
bodies between which it is applied, at laterally spaced locations therein, in the course of its insertion between the separate bodies, said teeth including at least a portion thereof angularly related and inclined to another portion thereof in an arrangement to facilitate the movement of the pressured flow of material displaced by said teeth over, about and to lock over and behind said teeth, as the segment is applied in use thereof.

4,214,794

BRAKE PRESSURE CONTROL APPARATUS FOR SPLIT BRAKING SYSTEM

Hiroyuki Kondo, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Aug. 28, 1978, Ser. No. 937,586
Claims priority, application Japan, Sep. 1, 1977, 52-105613
Int. Cl.[2] B60T *8/26*
U.S. Cl. 303—6 C **6 Claims**



1. A brake pressure control apparatus for a split braking system having a tandem master cylinder including two pressure generating chambers and wheel cylinders, comprising:

a body having first and second inlet ports communicating with said tandem master cylinder and first and second outlet ports communicating with said wheel cylinders;

first and second stepped cylindrical bores formed in said body, respectively;

a first stepped sleeve member positioned within said first bore to thereby define a first annular chamber on the outer periphery thereof and a first cylindrical chamber therein, said first annular chamber receiving brake fluid pressure from one of the brake pressure generating chambers of said tandem master cylinder through said first inlet port, and said first cylindrical chamber communicating with one of said wheel cylinders through said first outlet port,

a second stepped sleeve member positioned within said second bore to thereby define a second annular chamber on the outer periphery thereof and a second cylindrical chamber therein, said second annular chamber receiving brake fluid pressure from the other of the brake pressure generating chambers of said tandem master cylinder through said second inlet port, and said second cylindrical chamber communicating with the other of said wheel cylinders through said second outlet port;

said first cylindrical chamber communicating with said second annular chamber and said second cylindrical chamber communicating with said first annular chamber so that said first and second sleeve members are normally balanced by the brake fluid pressures from the brake pressure generating chambers of the tandem master cylinder, respectively;

a first brake pressure proportioning control valve assembly arranged within said first cylindrical chamber to thereby proportionally reduce increases in the brake fluid pressure within said first outlet port to increases in the brake fluid pressure within said second annular chamber, said first brake pressure proportioning control valve assembly being urged to its opening position by the movement of said first sleeve member when the braking pressure within said first annular chamber is less than the braking pressure within said first cylindrical member by a predetermined value so that said first cylindrical chamber is directly in communication with said first outlet port, and

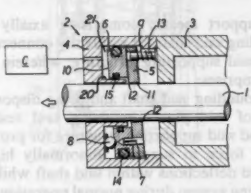
a second brake pressure proportioning control valve assembly arranged within said second cylindrical chamber to thereby proportionally reduce increases in the braking fluid pressure within said second outlet port to increases in the braking fluid pressure within said first annular chamber, said second brake pressure proportioning control valve assembly being urged to its opening position by the movement of said second sleeve member when the braking pressure within said second annular chamber is less than the braking pressure within said second cylindrical chamber by a predetermined value so that said second cylindrical chamber is directly in communication with said second outlet port.

4,214,795

PISTON BRAKING DEVICE FOR HYDRAULIC OR PNEUMATIC CYLINDERS

Tetsuo Kakuminato, Koshigaya, Japan, assignor to Shoketsu Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 20, 1978, Ser. No. 961,923
Claims priority, application Japan, Nov. 25, 1977, 52-158660
Int. Cl.[2] B60T *17/16*
U.S. Cl. 303—89 **5 Claims**



1. A braking device for a hydraulic or pneumatic cylinder comprising:

a cylindrical casing to be joined to one end of said cylinder and having an aperture in the outer end wall thereof for receiving a piston rod of said cylinder;

a sleeve fitted on said piston rod within said casing;

an annular braking plate loosely fitted on said piston rod within said casing;

a resetting piston hermetically fitted between the inner periphery of said casing and the outer surface of said sleeve in side-by-side relation with said braking plate and axially supported on a fulcrum member for rocking movement thereabout together with said braking plate;

a fluid chamber defined in said casing by said sleeve and resetting piston and connected to a pressure source;

a plate driving means mounted at a position radially opposite to said fulcrum member and acting to rock said braking plate about said fulcrum member together with said piston into a braking position tilted relative to the axis of said piston rod;

said braking plate having braking portions on the inner periphery thereof, said braking portions being brought into frictional contact with the circumference of said piston rod moving in one particular direction when said braking plate is tilted by said driving means thereby to apply to said piston rod a braking force increasing in proportion to the propelling force thereof;

said resetting piston having a pressure receiving surface within said fluid chamber; and

a brake control mechanism capable of applying pressure to said fluid chamber to push said resetting piston against said braking plate to maintain or reset said braking plate in

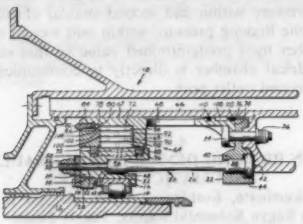
normal position perpendicular to the axis of said piston rod.

4,214,796

BEARING ASSEMBLY WITH MULTIPLE SQUEEZE FILM DAMPER APPARATUS

Fred J. Monzel, Loveland, and Melvin Bobo, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Oct. 19, 1978, Ser. No. 952,871
Int. Cl.[2] F16C *35/12, 39/04*
U.S. Cl. 308—26 **10 Claims**



1. An improved bearing assembly for supporting a rotating shaft, said assembly comprising:

a supporting structure;

a bearing surrounding said shaft and including an outer race, and

resilient support means, comprising axially aligned pins surrounding said shaft for resiliently connecting said outer race to said supporting structure; wherein the improvement comprises:

means surrounding said shaft and being disposed between a portion of said pins comprising said resilient support means and said supporting structure for providing a large damping force to suppress abnormally high unbalance forces and deflections within said shaft while maintaining a soft spring system during normal operation; wherein said damping means comprises a multiple squeeze film damper apparatus including:

a first and a second annular member surrounding said shaft, said members being spaced axially apart to form an annular cavity therebetween;

a plurality of nested annular sleeves surrounding said shaft and disposed within said cavity, said sleeves being of varying diameters to form annular spaces therebetween, the radially innermost of said sleeves being associated with said resilient support means and the radially outermost of said sleeves being associated with said supporting structure; and

means for supplying viscous fluid under pressure to each of said annular spaces.

4,214,797

CASE STRUCTURE

Peter A. Bórresen, Vejle, and Hans J. J. Greve, Billund, both of Denmark, assignors to A/S Modulex, Billund, Denmark

Filed Mar. 20, 1978, Ser. No. 888,363
Claims priority, application Denmark, Mar. 24, 1977, 1304/77
Int. Cl.[2] A47B *43/00*
U.S. Cl. 312—257 R **5 Claims**

1. An assembly for mounting a panel in a transparent case structure comprising a substantially flat and rigid base member for supporting the panel, a cover, said base member defining a pair of inwardly extending, longitudinal channels along oppositely disposed sides thereof and having downwardly projecting ledges extending lengthwise adjacent the channels, to form therewith substantially recesses which are hook-shaped in cross section, said cover comprising a rectangular plate made of a transparent, substantially rigid material and having a pair of downwardly projecting side walls along opposite sides thereof, the side walls each including a connecting member extending parallel and adjacent the lower edge of the respective side wall and having an inwardly extending, substantially hook-shaped projection adapted to interlockingly engage one

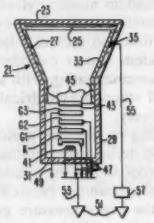
of the hook-shaped recesses in the base member, a flexible and bendable, lengthwise extending hinge member interconnecting said connecting member and the side wall of the cover whereby the cover is adapted to be detachably and hingedly connected to the base member.

4,214,798

METHOD FOR SPOT-KNOCKING THE ELECTRON-GUN MOUNT ASSEMBLY OF A CRT

Leonard F. Hopen, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 17, 1979, Ser. No. 40,054
Int. Cl.[2] H01J *9/00*
U.S. Cl. 316—26 **6 Claims**



1. A method for spot-knocking an electron-gun mount assembly in an evacuated cathode-ray tube, said mount assembly including a heater, a cathode, a control electrode, a screen electrode, a focus electrode and an anode, said method comprising interconnecting said heater, said cathode, said control electrode and said screen electrode, applying spot-knocking voltages between said anode and said interconnected gun elements, with said focus electrode electrically floating.

4,214,799

MOVABLE AND PRE-WIRED WALL STRUCTURE

Barton A. Biche, Binghamton, N.Y., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 929,585, Jul. 31, 1978, abandoned. This application Aug. 1, 1979, Ser. No. 62,655
Int. Cl.[2] H02G *3/08*
U.S. Cl. 339—20 **5 Claims**

1. A movable wall structure comprising:

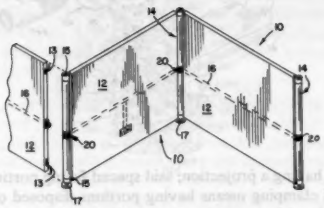
at least two prefabricated wall panels each having at least one integrally assembled electrical conductor terminating in an electrical contact element projecting from a lateral edge of the panel;

an elongated vertical support member;

means disposed adjacent the ends of the lateral edges of said wall panels for mechanically securing said panels to said support member in any one of a variety of angular orientations with said support member positioned adjacent said lateral edges of said panels, said mechanical securing means cooperating with securement elements disposed adjacent the ends of said support member; and

a feed-through connector mounted within said support member intermediate said securement elements and including a dielectric housing having a recess around its periphery and at least one conductive plate mounted within said recess, said housing having means for mounting said connector in telescopic engagement within said support member, said recess providing access to said conductive plate to electrically engage the contact elements of said wall panels, whereby the electrical conductors of said wall panels may be electrically coupled with said wall panels in any one of said variety of angular orientations;

said panel securing means and support member securement elements providing for rotation of said wall panels about said support member while maintaining said panels and said support member in mechanical engagement and while maintaining electrical circuit continuity between the panel contact elements and the connector plates.

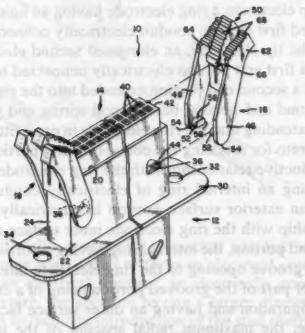


4,214,800

LATCHING-EJECTOR DEVICE

Robert D. Hollyday, Elizabethtown, and Wayne E. McKinnon, Landisville, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 8, 1979, Ser. No. 1,646
Int. Cl.[2] H01R *13/62*
U.S. Cl. 339—45 M **6 Claims**



1. In combination with a connector receptacle housing having a channel defined by a base and parallel sidewalls and at least two profiled apertures in opposing sidewalls, and with an elongate plug housing adapted for lateral insertion between the receptacle sidewalls into the channel and into mating relationship with the receptacle housing:

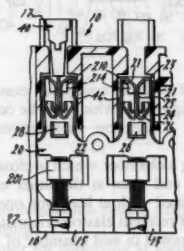
at least one latching-ejector device comprising at least one generally U-shaped rocker member having two parallel and spaced apart leg members depending from bight means into straddling engagement with the receptacle housing outside of the receptacle sidewalls, and each leg member having a transversely elongate stud extension at a distal end thereof directed inwardly through a respective one of said apertures to engagingly support a bottom surface of the plug housing along an upper elongate side of said stud extension, and said bight means having a latching projection directed toward and into latching engagement over an upper surface of the plug housing to latch the plug and receptacle housings together in said mating relationship.

4,214,801

FUSE HOLDER WITH INSERTION RAMP

Thomas M. Cairns, Birmingham; John H. Dewar, Grosse Ile, and Emmons F. Sumner, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 1, 1979, Ser. No. 16,579
Int. Cl.[2] H01R *11/22*
U.S. Cl. 339—59 R **5 Claims**



1. A terminal block and a fuse holder for use in said terminal block in conjunction with blade contacts of a fuse wherein said terminal block has a passage with a movable protrusion extending therein for engaging said fuse holder, said fuse being of a miniature nature with a pair of blade contacts, said fuse holder including a plurality of resilient spring clips each having a pair of opposing prongs, said fuse holder having an opening therein for receiving said protrusion;

said fuse holder having a ramp means attached to at least one of said prongs for facilitating movement of said prongs over said protrusion so that said protrusion slides over said prongs and said fuse holder continues to move into said passage and said protrusion comes to extend into said opening of said fuse holder,

the orientation of said spring clips with respect to said movable protrusion being such that said pair of opposing prongs define a blade receiving path therebetween which is in a plane generally parallel to the direction of travel of said movable protrusion;

said ramp means being an integral part of said fuse holder and adjacent the forwardmost portion of said fuse holder which enters said terminal block first, the entire fuse holder assembly being integrally formed from a single metal blank;

each of said pair of opposing prongs having an outside portion, an intermediate portion, and an end portion, there being a fold or bend between the outside portion and the intermediate portion and between the intermediate portion and end portion so that the two prongs are folded back on themselves twice, the end portion of each prong bearing resiliently against the outside portion, and the intermediate portions of the two prongs bearing against each other;

said ramp means being integrally connected to said intermediate portion at a position generally where opposing intermediate portions make contact and extending generally upward toward said bend between said outside and intermediate portions; and

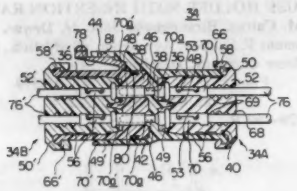
said opening being formed in a member extending between opposing ones of said outside portions.

4,214,802

WATERPROOF ELECTRIC CONNECTOR

Syuichi Otani, Tokyo, and Shinichi Kato, Fujisawa, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 12, 1979, Ser. No. 3,065
Claims priority, application Japan, Jan. 20, 1978, 53/5514
Int. Cl.[2] H01R *13/48, 13/54*
U.S. Cl. 339—60 M **9 Claims**



1. A waterproof electric connector comprising a pair of terminal pin holding blocks which can be coupled together to provide electrical connection therebetween, each of said blocks comprising:

a housing having a chamber which is closed at one end by a partition wall and open at the other end, said partition wall being formed with at least one opening;

a plug member of resilient elastomeric material sealingly but removably disposed in said chamber of said housing, said plug member being formed with a through hole which is aligned with said opening upon final fitting of said plug member in said chamber;

a contact pin sealingly but removably disposed in said through hole of said plug member in a manner that at least a section of said contact pin is placed in said opening of said partition wall, said contact pin having at the section thereof a mating portion matable with a mating portion of a contact pin of the paired terminal pin holding block;

locking means for locking said plug member and said housing together, said locking means including a flange portion formed about said housing at the open end of the same, and a folded back portion formed about one end of said plug member, said folded back portion enclosing said flange portion upon final fitting of said plug member in said housing thereby to accomplish locking engagement between said plug member and said housing;

coupling means for coupling said housing with a housing of the paired terminal pin holding block thereby to allow said contact pin to mate with the contact pin of the paired terminal pin holding block; and

sealing means for preventing said mating portion of said contact pin from being exposed to the surrounding air when the paired housing are coupled together.

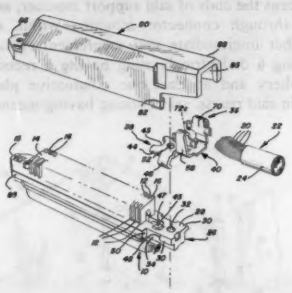
4,214,803

CONNECTOR CABLE CLAMP CONSTRUCTION

William H. McKee, and Glenn W. Plummer, both of West Covina, Calif., assignors to TRW Inc., Elk Grove Village, Ill.

Filed Jul. 24, 1978, Ser. No. 927,216
Int. Cl.[2] H01R *13/58*
U.S. Cl. 339—103 R **20 Claims**

1. A cable clamp for use with an electrical connector comprising means for anchoring said clamp to a connector end portion; opposed clamping means integrally joined with the anchor means for clampingly engaging a cable therebetween; at least one of said clamping means being deformable toward the other; each of said clamping means having spaced facing portions projecting in the general direction of the opposed clamping means; a floor portion interposed said clamping



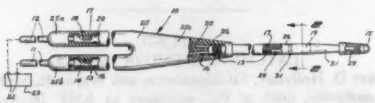
means having a projection; said spaced facing portions of each of said clamping means having portions disposed on opposite sides of and facing said projection for bending a cable between said projection and said spaced facing portions when said at least one clamping means is deformed toward the other of said clamping means.

4,214,804

PRESS FIT ELECTRICAL CONNECTION APPARATUS

Richard L. Little, Minneapolis, Minn., assignor to Daig Corporation, Minnetonka, Minn.

Filed Sep. 25, 1978, Ser. No. 945,113
Int. Cl.[2] H01R *11/32*
U.S. Cl. 339—183 **3 Claims**



1. For transmitting an electrical pulse from a pair of terminals of a pulse generator to a heart, a bipolar lead assembly comprising a first and a second connector pin adapted for being electrically connected to the terminals of a pulse generator, a tip electrode, a ring electrode having an inner surface, an elongated first electric conduit electrically connecting the first pin to the tip electrode, an elongated second electric conduit having a first end portion electrically connected to the second pin, and a second end portion extended into the ring electrode, said second end portion being a coil spring end portion, and means extending into the ring electrode in press fitting relationship thereto for retaining the coil spring end portion in electrical conductive relationship with the ring electrode, said means comprising an internal ring of electrically conductive metal having an exterior surface portion in electrically conductive relationship with the ring electrode inner surface and said coil spring end portion, the internal ring having a portion having an exterior groove opening to the ring electrode interior surface, the major part of the grooved portion being of a circular arcuate configuration and having an outer surface facing the ring electrode, the maximum radial spacing of the internal ring outer surface from the part of the ring electrode interior surface that the grooved portion open to being less than the maximum outer diameter of the helices of the coil spring end portion in a relaxed condition.

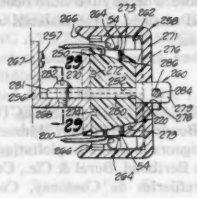
4,214,805
METHODS OF JOINING CONDUCTORS

Harry A. Faulconer, 8328 Center Dr., La Mesa, Calif. 92041

Continuation of Ser. No. 494,900, Aug. 5, 1974, abandoned, which is a division of Ser. No. 243,600, Apr. 13, 1972, Pat. No. 3,983,312, which is a continuation-in-part of Ser. No. 74,907, Sep. 23, 1970, Pat. No. 3,668,301, which is a continuation-in-part of Ser. No. 316, Jan. 2, 1970, abandoned, which is a continuation-in-part of Ser. No. 676,002, Sep. 28, 1967, abandoned, which is a continuation-in-part of Ser. No. 594,785, Nov. 16, 1966, abandoned. This application Nov. 18, 1977, Ser. No. 852,783

Int. Cl.³ H01R 9/04

U.S. Cl. 339—198 G 5 Claims



1. An array of electrical connector blocks comprising: a plurality of generally rectilinear blocks of insulative material, each said block having at least one opening in one surface thereof; a portion of an electrical conductor disposed in each of said openings; a conductive insert snugly received in each of said openings; each said insert being in electrical contact with the conductor portion therein; and means for securing said blocks in juxtaposition to one another; said securing means including a generally C-shaped clamping member retaining said blocks in juxtaposition to one another, a spring-clip of conductive material having portions contacting said conductive inserts in said openings in said blocks to establish electrical connection therebetween.

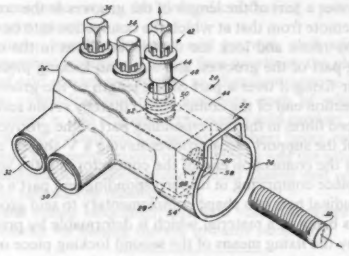
4,214,806
FAST RELEASE CONNECTOR

Russell H. Kraft, Rte. 82, R.D. No. 2, Hopewell Junction, N.Y. 12533

Filed Jul. 27, 1979, Ser. No. 61,277

Int. Cl.³ H01R 9/10

U.S. Cl. 339—242 7 Claims



1. An electrically conductive connector adapted to be releasably coupled with a stud to form an electrical connection comprising; an electrical terminal, an electrically conductive terminal aperture, the aperture having a larger diameter than the stud so as to facilitate introduction of the stud therein, a set screw threadedly mounted on the electrical terminal in position to be actuated from the exterior of the electrical terminal and to be reciprocally passed across the aperture to engage the stud inserted therein and form a fixed electrical connection between the stud and connector and release of the said screw will permit the stud to be removed from the connector, means formed in the aperture to cooperate with the set screw and stud to stabilize the interconnection therebetween particularly when subjected to forces acting other than along the axis of the set screw that otherwise could cause loosening of the interconnection between stud and connector, and at least one terminal port to facilitate electrical connection to selected conductors.

4,214,807
HOLOGRAPHIC OPTICAL SATELLITE COMMUNICATION SYSTEM

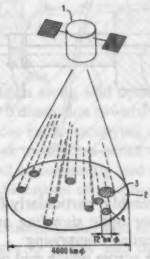
Fritz Gfeller, Adliswil, and Daniel Wild, Kilchberg, both of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,352

Claims priority, application Switzerland, Sep. 27, 1977, 11757/77

Int. Cl.³ G02B 5/32

U.S. Cl. 350—3.73 9 Claims



1. A satellite communication system provided with an optical carrier comprising:

a transmitting laser for supplying at least one laser beam, a data source, modulation means responsive to the data source and the laser beam for modulating a physical characteristic of the laser beam in accordance with the data content of the data from the data source, a laser beam deflection means responsive to the modulated laser beam for deflecting said beam from a datum position in a predetermined controlled manner, and holographic means positioned in a predetermined manner with respect to said datum position for utilizing the incident laser beam as a reference radiation source to generate therefrom a predetermined multiple beam transmitter radiation pattern.

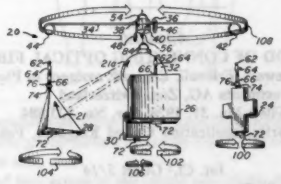
4,214,808
KALEIDOSCOPIC MOBILE

Edward A. Hampson, 4704 Harlan St., Suite 260, Denver, Colo. 80212

Filed Oct. 25, 1978, Ser. No. 954,414

Int. Cl.² G02B 27/08

U.S. Cl. 350—4.1 18 Claims



1. In a mobile the combination comprising:

a reflective object having an exterior mirror surface; and

a display object having a plurality of display surfaces displaying selected visual contrasts and mounted for rotation about a rotational axis opposite said mirror surface such that images from said display surfaces are successively reflected from said mirror surface upon the rotation of said display object and appear as continuously changing visual contrasts on said mirror surface.

4,214,809

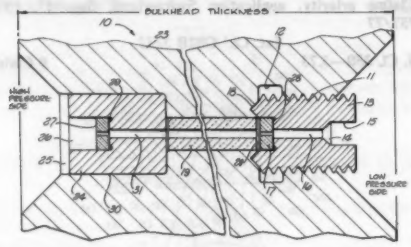
FIBER OPTIC PENETRATOR

Oswald R. Reh, Bonita, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 20, 1978, Ser. No. 926,514

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.20 **5 Claims**



1. A penetrator assembly, particularly for conveyance of an optical fiber in a fiber optic signaling arrangement across a large pressure differential, comprising:

a bulkhead member across which said pressure differential is extant between relatively high and relatively low pressure first and second surfaces thereof, respectively;

a first bore through said bulkhead of at least sufficient diameter to permit passage of a selected optic fiber axially therethrough;

first and second counterbores coaxial with said first bore but of larger diameter, each of said counterbores extending to a depth which is less than half of the thickness of said bulkhead member in the axial dimension of said bore and counterbores;

first and second pressure plugs installed in said first and second counterbores, respectively, said pressure plugs each including an optic fiber clearance axial bore coaxial with said first bore and said counterbores;

first and second jewel orifice members mounted within said first and second pressure plugs, respectively, said jewel orifice members each having a bore coaxial with said pressure plug clearance bores, a through passage being established within said penetrator assembly such that said optical fiber may be conveyed without interruption through said passage; said jewel member bores providing a closer tolerance fit against said optical fiber than provided in any other part;

and an adhesive sealant applied at least to the fit tolerance surface between said jewel orifice members and said optical fiber to provide a fluid-tight bond.

4,214,810

METHOD OF CONNECTING OPTICAL FIBRES

William J. Stewart, Fritwell, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed Jan. 31, 1978, Ser. No. 873,884

Claims priority, application United Kingdom, Feb. 1, 1977, 3983/77

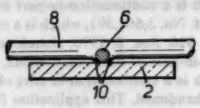
Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.21 **3 Claims**

1. A method of connecting an optical fibre to a piece of deformable material comprising:

positioning an optical fibre between a piece of deformable material and a non-heated tool having projections facing the material; and

pressing the tool and the piece of material together so that the projections displace material in such manner that the



material surrounds at least the majority of the circumference of the fibre whereby the fibre becomes substantially embedded and retained in the material without additional securing means.

4,214,811

OPTICAL FIBRE CONNECTOR

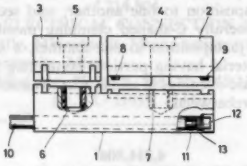
Pierre A. Benoit, Boudry, and Gilbert Widmer, Bienne, both of Switzerland, assignors to Ste. d'Exploitation des Cables Electriques, Systeme Berthoud, Borel & Cie., Cortaillod; S.A. des Cableries & Trefileries de Cossonay, Cossonay-Gare and Kabelwerke, Brugg A.G., Brugg, all of, Switzerland

Continuation-in-part of Ser. No. 816,204, Jul. 15, 1977, Pat. No. 4,183,616. This application Aug. 30, 1978, Ser. No. 938,257

Claims priority, application Switzerland, Sep. 1, 1977, 10661/77

Int. Cl.² G02B 5/14

U.S. Cl. 350—96.21 **8 Claims**



1. An optical-fibre connector for the connection of two groups of optical fibres provided with a sheath or a protective coating, the connector comprising a support piece provided with longitudinal grooves, a first locking piece and means for fixing it over a part of the length of the grooves at the connector end remote from that at which the connection is to be made to thereby retain and lock the unstripped fibres in the corresponding part of the grooves, and a second locking piece and means for fixing it over a part of the length of the grooves at the connection end of the connector to thereby retain and lock the stripped fibres in the corresponding part of the grooves, the bottom of the support piece grooves having a V-shaped cross-section at the connection end of the connector and the second locking piece comprising in its corresponding end part a comb of longitudinal bars of a shape complementary to said grooves, these bars being of a material which is deformable by pressure exerted by the fixing means of the second locking piece on the optical fibres during locking, the connector further comprising the improvements consisting of:

the support piece comprising grooves of V shape over its whole length and being provided in its part for taking up the stripped fibres with at least two transverse grooves;

the first locking piece likewise comprising longitudinal grooves;

the second locking piece comprising, over at least a part of the length of its part facing the support piece, a recess which houses a comb of longitudinal bars of deformable material with a form which is complementary to the grooves of the support piece;

the comb of bars being provided with at least two removable transverse bars, provided with a device for limiting the forces of compression of the fibres, arranged so as to penetrate during assembly into said transverse grooves of the support piece;

the support piece comprising at least two cylindrical longitudinal bores housing two spindles for assembling two similar connectors;

and screws for clamping the locking pieces onto the support piece and the spindles for assembling two similar connectors comprising a self-locking device for limiting the tightening force.

4,214,812

CONNECTING MODULE FOR SINGLE-STRAND OPTICAL CONDUCTORS AND A CONNECTOR INCLUDING AT LEAST ONE SUCH MODULE

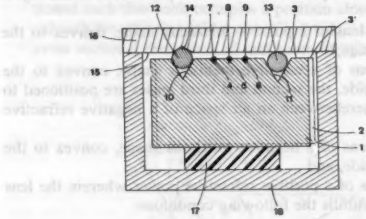
Michel O. de Mendez, Montlery, France, assignor to Souriau & Cie, Boulogne-Billancourt, France

Filed Jan. 8, 1979, Ser. No. 1,476

Claims priority, application France, Jan. 19, 1978, 78 01445

Int. Cl.[2] G02B *5/14*

U.S. Cl. 350—96.21 **10 Claims**



1. A connecting module for a single-strand optical conductor, comprising

two carriers adapted for placement into end-to-end abutment, each said carrier including in an identical manner a planar face having an optical conductor carrying longitudinal groove of small V-shaped cross-section therein, each of said carriers being adapted for receiving a respective one of the single-strand optical conductors to be connected in said small groove therein with one end of the conductor disposed in the plane of the facing end of the respective one of the two said carriers, and each of said carriers having in the planar faces thereof a pair of alignment grooves;

a stirrup member for each said carriers, each said stirrup member including a planar face overlying the planar face of said carrier and having an alignment groove therein;

two cylindrical alignment members, each of which is received in said alignment grooves of said carriers, only one of said cylindrical alignment members being received in said alignment groove of said stirrup and the other of said alignment members being applied against said planar face of said stirrup member; and,

elastic means associated with said stirrup member and said carrier for biasing thereof towards each other.

4,214,813

PRISMATIC LIGHT BEAM EXPANDER OR COMPRESSOR MEANS

Joseph T. McNaney, 8548 Boulder Dr., La Mesa, Calif. 92041

Filed Jul. 11, 1978, Ser. No. 923,709

The portion of the term of this patent subsequent to Dec. 5, 1995, has been disclaimed.

Int. Cl.[3] G02B *5/30, 5/04*

U.S. Cl. 350—152 **8 Claims**

1. An optical system for effecting a series of individual changes in a cross sectional dimension of a beam of light directed along an optical path therein extending from an input path to an output path for said beam of light;

(a) said system including a formation of light conducting material having a predetermined cross sectional configuration and length dimension and presenting along said length dimension an array of outer surfaces of which a first plurality are representative of light reflecting surfaces and a second plurality are representative of light refracting surfaces;

(b) said array of outer surfaces each angularly oriented one in relation to the other so as to provide an optical relationship between said input and output paths, said input and output paths, respectively, at first and second ends of said length dimension;

(c) said beam of light directed along said input path at a predetermined angle of entry toward said array of surfaces and thereupon along said optical path in the direction of said length dimension toward said output path, said refracting surfaces each occupying a position along said optical path so as to effect a series of refractions of said beam of light and consequently said series of changes in a cross sectional dimension of said beam along said optical path;

(d) said optical relationship and said angle of entry allowing said beam of light to follow said optical path forming a helix of plural revolutions, the revolutions of said helix extending along said length dimension in a side-by-side relationship;

(e) said side-by-side relationship including equidistant center-to-center spacings of the revolutions of said helix and said center-to-center spacings directly related to said angle of entry of the beam of light along said input path toward said array of surfaces.

4,214,814

VARIABLE SOFT FOCUS LENS SYSTEM

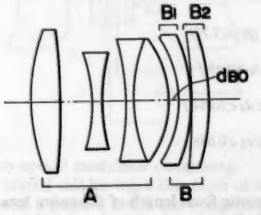
Shuji Ogino, Osaka; Toshinobu Ogura, Tondabayashi; Yukio Okano, Osaka, and Akiyoshi Nakamura, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 7, 1978, Ser. No. 884,357

Claims priority, application Japan, Mar. 7, 1977, 52/24964

Int. Cl.[2] G02B *13/20, 9/60, 9/64*

U.S. Cl. 350—188 **14 Claims**



1. A variable soft focus lens system comprising;

a first lens group having an image side surface convex to the image side, and

a second lens group at the image side of the first lens group having an object side surface concave to the object side whereby a meniscus shaped airspace is created between the object side surface of the second lens group and the

image side surface of the first lens group, with at least the second lens group being movable along the optical axis relative to the first lens group for the purpose of variably adjusting a spherical aberration of the lens system, the meniscus shaped airspace being changed with the movement of the second lens group relative to the first lens group; the refractive power Φ_B of the second lens group being defined relative to the total refractive power Φ of the lens system by the following formula

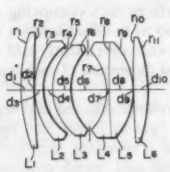
$$0.5\Phi > \Phi_B > -0.3\Phi.$$

4,214,815

SEMI-WIDE ANGLE OBJECTIVE LENS

Toshiko Shimokura, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 6, 1978, Ser. No. 913,018
Claims priority, application Japan, Jun. 23, 1977, 52-73881
Int. Cl.² G02B 9/60, 9/62
U.S. Cl. 350—215 **7 Claims**



1. A semi wide angle objective lens constituting of five groups of six lens elements formed a front group having the first group of a positive meniscus single lens L_1 with its convex surface directed toward the object side, the second group of a negative meniscus single lens L_2 with its convex surface directed toward the object side and the third group of a positive meniscus single lens L_3 with its convex surface directed toward the object side, and forming a rear group having the fourth group of a negative lens L_4 with its concave surface having a large curvature directed toward the object side and of a positive lens L_5 with its convex surface having a large curvature directed toward an image side which are arranged with a mutual contact condition therebetween, and the fifth group of a positive lens L_6 characterized in that each of the following conditions, i.e.

$$1.69f < |f_2| < 1.79f \quad (1)$$

$$0.27f < r_4 < 0.29f \quad (2)$$

$$0.045f < d_4 < 0.054f \quad (3)$$

$$0.94 < r_4/r_5 < 0.096 \quad (4)$$

where,

f: the composite focal length of the entire lens system

f_2: the single focal length of the lens L_2 of the second group

r_4: the radius of curvature of the rear surface of the lens L_2 of the second group

d_4: the axial air space between the lens L_2 of the second group and lens L_3 of the third group

r_5: the radius of curvature of the front surface of the lens L_3 of the third group

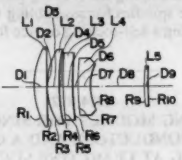
is fulfilled.

4,214,816

HIGH SPEED TELEPHOTO LENS SYSTEM

Tamikazu Yamaguchi, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 21, 1978, Ser. No. 944,373
Claims priority, application Japan, Sep. 27, 1977, 52/116497
Int. Cl.² G02B 13/02
U.S. Cl. 350—218 **7 Claims**



1. An improved compact high speed telephoto lens system comprising, from the object to the image side of the lens system;

a first lens of a positive meniscus shape, convex to the object side;

a second lens of a positive meniscus shape, convex to the object side;

a third lens of a negative meniscus shape, convex to the object side, the second and third lenses are positioned to form therebetween an air space of a negative refractive power;

a fourth lens of a negative meniscus shape, convex to the object side, and

a fifth lens of a positive refractive power wherein the lens system fulfills the following conditions:

$$0.2 < D_B/D_A < 0.45$$

$$-0.8/f < 1.0\text{-}N_A/R_A + N_B\text{-}1.0/R_B < -0.1/f$$

$$N_C > 1.7$$

wherein:

D_A represents a sum of the axial distance from the object side surface of the first lens to the image side surface of the fourth lens;

D_B represents a sum of the axial distances from the image side surface of the third lens to the image side surface of the fourth lens;

R_A represents a radius of curvature of the image side surface of the second lens;

R_B represents a radius of curvature of the object side surface of the third lens;

N_A represents a refractive index of a glass material forming the image side surface of the second lens;

N_B represents a refractive index of a glass material forming the object side surface of the third lens;

N_C represents a refractive index of a glass material forming the image side surface of the four lens; and f represents the focal length of the whole lens system.

4,214,817

PRISMATIC LIGHT BEAM EXPANSION OR COMPRESSION SYSTEM

Joseph T. McNaney, 8548 Boulder Dr., La Mesa, Calif. 92041

Filed Sep. 14, 1978, Ser. No. 942,263
Int. Cl.² G02B 5/04
U.S. Cl. 350—286 **3 Claims**

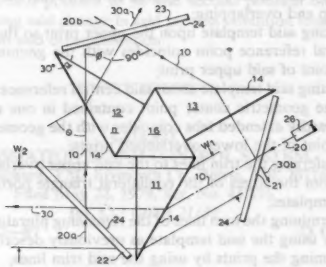
1. An optical system for effecting a series of individual changes in a cross sectional dimension of a beam of light directed along an optical path therein extending from a light input path to said system to a light output path from said system, comprising:

(a) at least three light refracting prisms, providing, respectively, first, second and third light refracting surfaces, and at least three light reflecting mirrors, providing, respectively, first, second and third light reflecting surfaces, each said refracting surface presenting a length dimension and said reflecting surfaces positioned along said length dimension;

(b) said first, second and third refracting surfaces and said first, second and third reflecting surfaces each angularly oriented one with respect to the other so as to provide an optical relationship between said input path and said optical path and between said optical path and said output path;

(c) whereby said beam of light is directed along said input path and thereupon along said optical path toward said output path following a predetermined angle of entry toward a predetermined one of said refracting surfaces, said angle of entry allowing the beam of light to follow said optical path forming a helix of at least one revolution, said helix extending a predetermined distance along said length dimension and said distance being directly related to said angle of entry to said beam of light;

(d) said first, second and third light refracting surfaces positioned such that each occupies a position along said optical path for effecting said series of individual changes in a cross sectional dimension of said beam of light;



(e) a first predetermined one of said light reflecting surfaces positioned along said length dimension so as to allow a passing of said beam of light along said input path toward said incident on a first predetermined one of said light refracting surfaces;

(f) a second predetermined one of said light reflecting surfaces positioned along said length dimension so as to effect a reflecting of said beam of light, upon a refracting of said beam at said first predetermined one of said refracting surfaces, along said optical path toward and incident on a second predetermined one of said light refracting surfaces;

(g) a third predetermined one of said light reflecting surfaces positioned along said length dimension so as to effect a reflecting of said beam of light, upon a refracting of said beam at said second predetermined one of said refracting surfaces, along said optical path toward and incident on a third predetermined one of said light refracting surfaces;

(h) whereby the position said first predetermined one of said light reflecting surfaces along said length dimension allows a reflecting of said beam of light, upon a refracting of said beam at said third predetermined one of said refracting surfaces, for a continuing of said beam along said optical path, whereupon the position of a predetermined one of said light reflecting surfaces along said length dimension allows a passing of said beam of light along said output path and beyond the light reflecting limits of said one light reflecting surface.

4,214,818

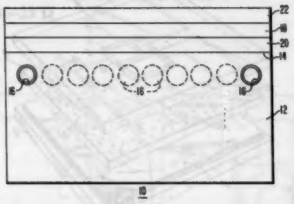
HOT PRESSED SIC-HIGH POWER LASER MIRROR

Wolfgang J. Choyke, Pittsburgh, and Richard A. Hoffman, Export, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 661,921, Feb. 27, 1976, Pat. No. 4,142,006, which is a continuation-in-part of Ser. No. 481,268, Jun. 20, 1974, abandoned. This application Nov. 8, 1978, Ser. No. 959,041

Int. Cl.² G02B 5/08

U.S. Cl. 350—310 **7 Claims**



1. A laser mirror comprising a refractory composition substrate having an optical finish on one surface thereof, said substrate having a high thermal conductivity of at least 2 watts/cm° K., a low coefficient of thermal expansion of less than about 5×10^{-6}/° C. and a hardness of at least 9 MOH, said optical finish having a roughness within the range between about 7 and 10 angstroms RMS, a metal film having a high thermal conductivity disposed to cover the optical finish and having a thickness not in excess of 8000 angstroms and a protective transparent dielectric film disposed to cover the metal film and having a thickness of less than 2000 angstroms.

4,214,819

ELECTRO-OPTICAL MODULATOR

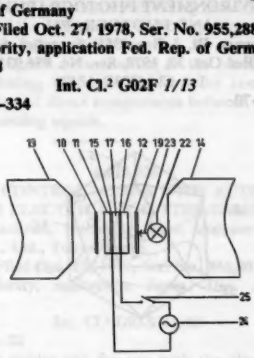
Ludwig Pohl, Darmstadt; Rudolf Eidenschink, Dieburg; Joachim Krause, Darmstadt-Eberstadt, and Georg Weber, Erzhausen, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Oct. 27, 1978, Ser. No. 955,288

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1977, 2748738

Int. Cl.² G02F 1/13

U.S. Cl. 350—334 **13 Claims**



1. An electro-optical modulator comprising:

(a) a liquid crystal cell having a thin layer of liquid crystal material with a positive DKA and a negative DMA positioned between two transparent electrode layers across which a potential difference establishes in the liquid crystal layer an electric field perpendicular to the electrode layers;

(b) crossed polarizers sandwiching the cell; and

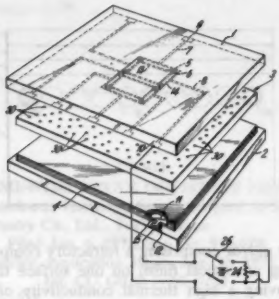
(c) means for establishing a magnetic field in the liquid crystal layer having a predetermined direction relative to the direction of the electric field.

4,214,820

ELECTROCHROMIC DISPLAY HAVING ENHANCED NIGHT VIEWABILITY

Marshall Leibowitz, Ridgefield; Alan Willis, Stamford, and Douglas George, Waterbury, all of Conn., assignors to Timex Corporation, Waterbury, Conn.

Filed Sep. 15, 1978, Ser. No. 942,725
Int. Cl.² G02F 1/17
U.S. Cl. 350—357 **10 Claims**



1. In an electrochromic display comprising a first substrate with selectively actuable transparent electrodes and image-forming electrochromic layers thereon, a second spaced substrate with a counter-electrode and an ion-conducting layer therebetween, the improvement which comprises:

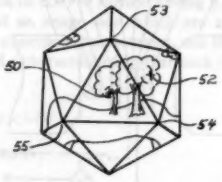
self luminous light means disposed within the ion-conducting layer at such locations behind the image-forming electrochromic layers that sufficient back lighting of said layers for enhanced night viewability is achieved, said light means including radioactive emitter means and radioluminescing means in cooperative relationship within said ion-conducting layer.

4,214,821

TOTAL ENVIRONMENT PHOTOGRAPHIC MOUNT AND PHOTOGRAPH

Richard A. Termes, Rt. 2, Box 435B, Spearfish, S. Dak. 57783

Filed Oct. 30, 1978, Ser. No. 956,031
Int. Cl.² G03B 37/00
U.S. Cl. 352—70 **4 Claims**



1. A method of manufacturing a total environment photograph comprising:

exposing a plurality of photographs in reference to each of the plurality of faces upon a camera mount in the form of a polyhedron;

printing said photographs to a size suitable for the finished assembly;

determining and marking upon the face of said prints the geometric center of each print;

placing two of the said prints which were exposed from adjacent faces of said camera mount so that the images are up and overlapping;

constructing a line between the geometric centers of said overlapped prints;

constructing a perpendicular bisector to said line between said geometric center points;

rotating the line segment between the geometric center point, of the upper print, and the perpendicular bisector one hundred and twenty degrees both clockwise and counter clockwise about the geometric center point on the upper print;

constructing lines perpendicular to said rotated line segments creating a equilateral triangle on the upper print;

constructing a template, from a thin material, of the same size and configuration as said equilateral triangle constructed upon the upper print, said template provided with a central reference point coincident with the geometric center point of said equilateral triangle, said template provided with tabs extending outwardly from the midportion of each of the three sides of said equilateral triangle, said tabs being of sufficient length to contain the geometric center points of adjacent overlapped prints, the location of said geometric center points of adjacent overlapped prints lying upon reference lines extending from said central reference point and perpendicular to each of the sides of said equilateral triangle and at a distance from said central reference point equal to twice the distance from said central reference point to the point where said reference lines intersect the sides of said equilateral triangle;

placing two of the said prints which were exposed from adjacent faces of said camera mount so that the images are up and overlapping;

placing said template upon the upper print so that said central reference point coincides with the geometric center point of said upper print;

rotating said template about said central reference point until the geometric center point contained in one of the outwardly extended tabs coincides with the geometric center point of the lower overlapped prints;

transferring the trim lines to the said upper overlapped print from the edges of the equilateral triangle portion of said templates;

determining the trim lines of the remaining plurality of prints by using the said template as previously described;

trimming the prints by using the said trim lines;

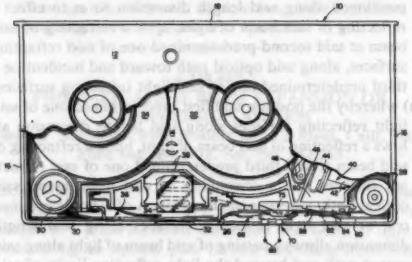
bonding together the edges of adjacently exposed prints resulting in a polyhedron body whereby the photographic image across the transition of adjacent edges of said trimmed prints is continuous.

4,214,822

MULTIPURPOSE FILM CASSETTE HAVING ONE-PIECE ROTATING PROCESS MODE SWITCH

Donald E. Moodie, Marblehead, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 6, 1979, Ser. No. 63,672
Int. Cl.² G03B 23/02; G03C 11/00
U.S. Cl. 352—78 R **9 Claims**



1. A photographic film cassette for use with other apparatus,

said cassette configured for depositing a coating of processing fluid on a moving run of a cassette retained photographic film strip to develop viewable images thereon, said cassette comprising:

a cassette housing;

means responsive to a drive arrangement of the other apparatus for advancing the film along a given path within said housing;

means actuatable in accordace with a predetermined processing operation of said cassette for depositing processing fluid on the advancing film strip;

means for indicating to the other apparatus the processed or unprocessed condition of the film strip, said indicating means comprising an indicating element mounted within said housing for rotation about a fixed axis from a first position wherein said indicating element will operatively engage a signal generating arrangement carried by the other apparatus when said cassette is in operative engagement with said other apparatus, thereby indicating a given process condition of the film in the cassette, to a second position wherein said indicating element will not operatively engage the signal generating arrangement of the other apparatus when the cassette is in operative engagement with the other apparatus thereby indicating another different process condition of the film in the cassette; and

selectively operable means responsive to said predetermined processing operation of said cassette for engaging and rotating said indicating means about said fixed axis from its said first position to its said second position thereby indicating said change in said process condition from said given to said other condition.

4,214,823

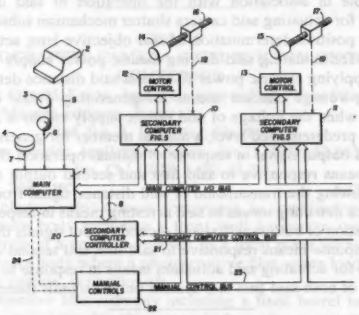
ANIMATION STAND CONTROL SYSTEM

Eric K. Pritchard, 1702 Plymouth Ct., Bowie, Md. 20716

Filed May 22, 1979, Ser. No. 41,376

Int. Cl.³ G03B *21/32*

U.S. Cl. 352—87 **13 Claims**



1. In an animation stand having a camera, a support means for positioning an object relative to said camera, and drive means for moving said camera and support means relative to each other in response to driver command signals, the improvement comprising:

means for producing input command signals in response to non-numeric manual manipulations and

computing means for calculating driver command signals in response to said input command signals, storing said calculated driver command signals and outputing driver command signals to said driver means to move said object and camera relative to each other.

4,214,824

PHOTOGRAPHIC-CAMERA FOCUSSING SYSTEM WITH COMPARATOR RECEIVING REQUIRED-AND ACTUAL-SETTING DATA

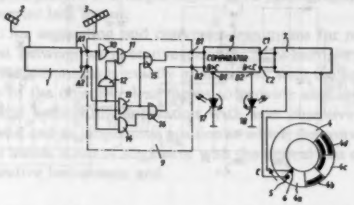
Otto Stemme, Munich; Peter Lermann, Narring; Eduard Wagensonner, Ascheim, and Istvan Cocron, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Jan. 16, 1979, Ser. No. 3,809

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1978, 2801747

Int. Cl.³ G03B *13/02*

U.S. Cl. 354—23 D **4 Claims**



1. In a focusing system of a photographic camera of the type provided with an exposure objective, a focus adjuster device for changing the subject-distance setting of the exposure objective, means generating coded digital actual-setting signals dependent upon the setting of the focus adjuster device, and means for automatically generating coded digital required-setting signals dependent upon the true distance from the camera to the subject to be photographed, the coded digital actual-setting signals and the coded digital required-setting signals representing subject-distance setting information using two different digital encoding schemes, a comparator having a first input connected to receive the actual-setting signals and having a second input and having an output and producing at its output signals dependent upon the relationship between the signals applied to its first and second inputs; and a code-conversion stage having an input connected to receive the coded digital signals from one of said means and having an output connected to one input of the comparator and comprising a plurality of interconnected logic gates operative for transforming the coded digital signals from the one to the other of said two different encloding schemes, whereby the comparator can perform simple and direct comparisons between actual-setting and required-setting signals.

4,214,825

SHUTTER CONTROL MEANS WITH AUTO STROBO FOR ELECTRICAL SHUTTER CAMERA

Kazunori Mizokami, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1977, Ser. No. 844,802

Claims priority, application Japan, Dec. 3, 1976, 51-162609[U]

Int. Cl.² G03B *15/05*

U.S. Cl. 354—33 **6 Claims**

1. An auto strobo unit for use with the electrical shutter circuit of a camera, said electrical shutter circuit including X contacts for triggering operation of the auto strobo unit upon initiation of a photographing operation and exposure control means for operating said electrical shutter circuit to a shutter closing condition when light reflected from the object being photograped reaches a sufficient level, said auto strobo unit comprising:

a flash lamp;

a trigger circuit responsive to closure of X contacts for energizing said flash lamp;

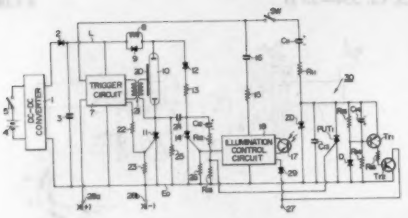
illumination control means responsive to light reflected from the object being photographed to extinguish the flash

lamp when the reflected light reaches a predetermined level;

delay means operative responsive to energization of said flash lamp for establishing a fixed time delay interval;

switching means responsive to said delay means for applying a shutter closing signal to said electrical shutter circuit upon the end of said delay interval;

control means responsive to the flash lamp extinguishing condition of said illumination control circuit to prevent said delay means from operating said switching means whereby said electrical shutter circuit is operated to said



shutter closing condition responsive only to said exposure control means;

said delay means being adapted to establish a delay interval which terminates immediately after termination of the illumination of the flash lamp in the absence of a flash lamp extinguishing condition by said illumination control circuit whereby the electrical shutter circuit is operated by said delay means in the presence of an insufficient exposure condition and is operated by said exposure control means in the presence of a sufficient exposure condition.

4,214,826

METHOD AND DEVICE FOR CONTROLLING THE EXPOSURE OF A CAMERA WHEN PHOTOGRAPHING AN OBJECT OF WHICH LUMINANCE IS DIFFERENT ON EACH SURFACE SECTION THEREOF

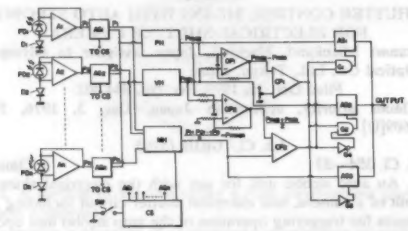
Yasuo Uchida; Kazuo Shiozawa, and Kiziro Suzuki, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 706,070, Jul. 16, 1976. This application May 4, 1978, Ser. No. 906,329

Claims priority, application Japan, Jul. 21, 1975, 50-89484

Int. Cl.[2] G03B *7/08*

U.S. Cl. 354—31 **2 Claims**



1. A method of controlling exposure of a camera comprising the steps of:

measuring the luminance of a scene to be photographed by a plurality of photoelectric elements which are arranged on a substantially image-forming plane to receive light from respective portions of said scene;

obtaining the maximum and minimum values of the outputs of said photoelectric elements;

determining whether the difference between said maximum and minimum values is greater than a predetermined value or not;

obtaining the mean value of the outputs of said photoelectric elements;

and deriving information for exposure from said maximum, minimum and mean values so that said information is equivalent to said mean value when said difference is smaller than said predetermined value and so that said information is equivalent to either one of said maximum and minimum values when said difference is larger than said predetermined value.

4,214,827

AUTOMATIC FOCUS CONTROL CAMERA

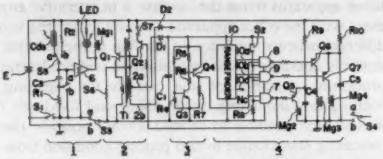
Shinji Tominaga; Toshinori Imura; Seiji Yamada, all of Sakai, and Yasuzi Kogure, Kawanishi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 17, 1978, Ser. No. 961,505

Claims priority, application Japan, Nov. 22, 1977, 52-140180

Int. Cl.[2] G03B *13/20, 15/05, 17/38*

U.S. Cl. 354—127 **10 Claims**



1. An automatic focus control camera comprising a camera objective lens; driving means for driving said camera objective lens along the optical axis thereof to change the focusing of the same; distance detecting means for generating a distance signal representative of the distance from the camera to an object to be photographed, regardless of the axial position of said camera objective lens; arresting means for arresting said driving means during its operation and determining the axial position of said camera objective lens in accordance with said distance signal; a camera shutter mechanism; shutter release means operable in association with the operation of said driving means for actuating said camera shutter mechanism subsequent to the position determination of said objective lens; actuation means for actuating said driving means; power supply means for supplying electric power to at least said distance detecting means; voltage checker means for generating a first output signal when the voltage of said power supply means is higher than a predetermined level; a manual member for generating a second output signal in response to manual operation thereof; gate means responsive to said first and second output signals for allowing the transmission of said distance signal from said distance detecting means to said arresting means in response to application of both said first and second output signals thereto; and response means responsive to said first and second output signals for actuating said actuation means in response to application of both said first and second output signals thereto.

4,214,828

WEB CASSETTE WITH CARTRIDGE LOAD

Donald J. Axelrod, Glenview, Ill., assignor to Bell & Howell Company, Chicago, Ill.

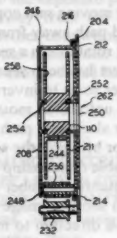
Continuation of Ser. No. 793,621, May 4, 1977, Pat. No. 4,153,361. This application Feb. 16, 1979, Ser. No. 12,623

Int. Cl.[2] G03B *17/26*

U.S. Cl. 354—275 **7 Claims**

1. A light-tight cartridge for either containing, supporting, and supplying unexposed film or for taking-up, supporting and containing exposed film responsive to a demand for delivery of film by a camera containing said cartridge, said cartridge comprising an integrally molded structure forming a light-tight

enclosure defined by two relatively large side panels having surfaces held in a spaced parallel relationship by at least one closed wall interrupted by a slot, said wall being upstanding upon and projecting outwardly from one of said side panels, means formed around the perimeter of the other of said side panels for light-tight sealing against the outwardly projecting edges of said upstanding wall to form a light-tight seal between said perimeter and said projecting edges, at least one somewhat V-shaped recess formed in said upstanding wall to be captured by a cooperating detent formed in said camera, means associated with said one side panel for rotatably receiving a wound coil of film within the light-tight enclosure, the axis of said received coil being generally perpendicular to the surface of said one side panel, said slot being formed in said upstanding



wall at a position which enables said rotatably mounted film to be drawn from or into said cartridge responsive to said film delivery demand by said camera, light-sealing means at said slot for enabling a passage of said film while precluding passage of light through said slot, and means formed on the outside of said cartridge for enabling said cartridge to be supported in either a film supply position or a film take-up position within said camera, whereby a cartridge loaded with unexposed film may be positioned at a supply position within said camera until the film loaded into said cartridge is substantially exhausted and then said exhausted cartridge may be moved to a take-up position in said camera for receiving exposed film after it is drawn from a freshly loaded cartridge in said supply position.

4,214,829

PHOTOGRAPHIC CAMERA WITH BUILT-IN OPTICAL CONVERTER

Saichiro Ohashi, Kyoto, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 1, 1978, Ser. No. 911,541
Claims priority, application Japan, Jun. 1, 1977, 52-64355
Int. Cl.[2] G03B *3/00, 13/02*
U.S. Cl. 354—197 **6 Claims**

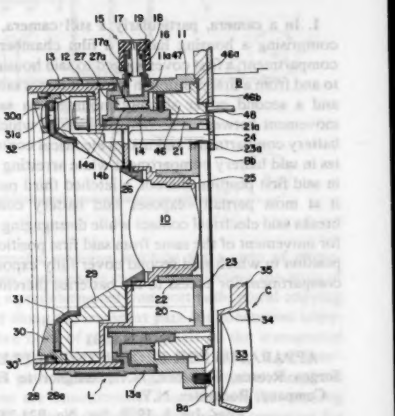
1. A photographic camera comprising, in combination:

a camera body including a front wall having an opening therein at a position opposed to a focal plane within the camera body where a photosensitive film, when loaded in the camera, is positioned;

an objective lens assembly including a fixed barrel having one end secured to the camera body in alignment with the opening in said front wall of the camera body, an objective lens means providing a principal optical system of a first predetermined focal length, a lens mount means for supporting the objective lens means for movement together therewith, a focusing barrel means positioned on one side of the fixed barrel remote from the camera body, in alignment with any one of the fixed barrel and the optical axis of the objective lens means, said focusing barrel means being supported by said fixed barrel for rotation about the optical axis of the objective lens means through first and second predetermined focusing angles, and a motion translating barrel means positioned substantially internally of the fixed barrel and the focusing barrel means and externally of said lens mount means for transmitting rotary motion of said focus adjusting barrel means to said lens mount means to move the latter in an axial direction parallel to the optical axis of the objective lens means, said force adjusting barrel means, when rotated through the first predetermined focusing angle, rendering the principal optical system operable to take a photographic picture of a target object to be photographed and said focus adjusting barrel means, when rotated through the second predetermined focusing angle, rendering another optical system of a second predetermined focal length, different from said first predetermined focal length of said principal optical system, operable to take a photographic picture of a target object to be photographed;

a converter lens means;

means for supporting said converter lens means for movement between an operative position, in which the converter lens means is exactly in alignment with the optical axis of the objective lens means to provide said another optical system in cooperation with said objective lens means, and an inoperative position in which the converter lens means is out of alignment with the optical axis of the objective lens means; and



means for causing said supporting means to move from the inoperative position to the operative position in response to change from the capability of rotation of the focus adjusting barrel means within the range of the first predetermined focusing angle to the capability of rotation of the focus adjusting barrel means within the range of the second predetermined focusing angle, and vice versa, said supporting means comprising a pivotably supported, elongated arm member having one end rigidly carrying the converted lens means and the other end carrying an engagement element, means for biasing said arm member toward the operative position and wherein said causing means comprises cam means operatively coupled to the focus adjusting barrel means, said cam means having a cam in constant engagement with said engagement element under the influence of the biasing force of said biasing means and said cam being shaped such that, so long as the focus adjustment barrel means is rotated within the range of the first predetermined focusing angle, the supporting means is held in the operative position, and so long as the focus adjusting barrel means is rotated within the range of the second predetermined focusing angle, the supporting means is held in the inoperative position.

4,214,830
CONDUCTING BATTERY COMPARTMENT CLOSURE THAT ALSO LOCKS FILM DOOR

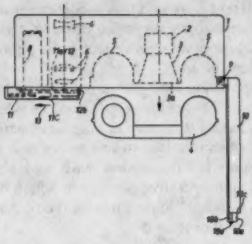
Rolf Schröder, Baldham, Fed. Rep. of Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Dec. 5, 1978, Ser. No. 966,598

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1977, 7738283[U]; Oct. 13, 1978, 2844728

Int. Cl.[2] G03B *17/02*; H01R *33/06*

U.S. Cl. 354—202 **13 Claims**



1. In a camera, particularly a still camera, a combination comprising a housing having a film chamber and a battery compartment; a first cover hinged to said housing and movable to and from a first position in which it closes said film chamber; and a second cover slidably mounted on said housing for movement between a second position in which it closes said battery compartment and makes electrical contact with batteries in said battery compartment while arresting said first cover in said first position thereof, a latched third position in which it at most partially exposes said battery compartment and breaks said electrical contact while disengaging said first cover for movement of the same from said first position, and a fourth position in which said second cover fully exposes said battery compartment for access to the batteries therein.

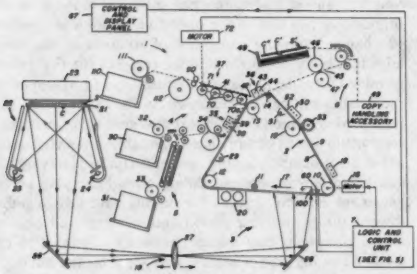
4,214,831
APPARATUS FOR PRODUCING DUPLEX COPIES

Jorgen Reesen, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,287

Int. Cl.[2] G03G *15/00*

U.S. Cl. 355—3 R **9 Claims**



1. Apparatus for producing simplex or duplex images on a copy sheet, said apparatus comprising:

a movable photoconductive member;

means for forming unfixed transferable toner images on said photoconductive member;

first and second toner image transfer stations located in transferable relationship with said photoconductive member for transferring said images from said photoconductive member to a copy sheet;

means for moving a copy sheet along a copy sheet path located between said first and second transfer stations and including a plurality of vacuum rollers including at least a first roller located adjacent to said photoconductive member and a guide member associated with said vacuum rollers;

said vacuum rollers being operable in synchronism with said movable photoconductive member and being rotatable when duplex images are produced on a copy sheet in a first direction for attracting by vacuum a copy sheet separating from transfer relationship with said photoconductive member and to one side of which copy sheet a first transferable image has been transferred at said first transfer station, and for moving said copy sheet over said guide member along said path away from said photoconductive member and being rotatable in a second opposite direction after said copy sheet has been separated from said photoconductive member so as to invert said copy sheet while said first image is unfixed to move said copy sheet over said guide member along said path toward said photoconductive member for bringing the second side of said copy sheet into transferable relationship with said second image on said photoconductive member at said second transfer station and when a simplex image is produced on a copy sheet in said second direction to move a copy sheet over said guide member toward said photoconductive member to bring a side of said copy into transferable relationship with an image on said photoconductive member at said second image transfer station.

4,214,832
ELECTROSTATIC COPYING MACHINE COMPRISING IMPROVED DOCUMENT SCANNING MEANS

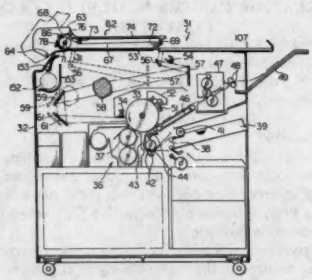
Masao Kono; Tatsuo Tani; Toshiyuki Ogawa, and Kenzo Ariyama, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 27, 1977, Ser. No. 864,548

Claims priority, application Japan, Dec. 25, 1976, 51-157158; Dec. 25, 1976, 51-157159

Int. Cl.[2] G03G *15/28*; G03B *27/52, 27/50*

U.S. Cl. 355—8 **27 Claims**



1. An electrostatic copying machine comprising:

a transparent platen for supporting an original document;

a moving photoconductive member;

optical means having a movable scan member for focussing a light image of the original document onto the photoconductive member to form an electrostatic image;

conveyor means movable over the platen surface for conveying the original document across the platen;

control means for selectively controlling the optical means and conveyor means in a first scan mode in which the document is maintained stationary in a scan position on the platen and the movable scan member is moved relative

thereto, a second scan mode in which the movable scan member is held stationary and the document is moved by the conveyor means at a scan speed, and a third scan mode in which the document is moved by the conveyor means from an insertion position to the scan position at a feed speed which is higher than the scan speed and the movable scan member is moved relative thereto;

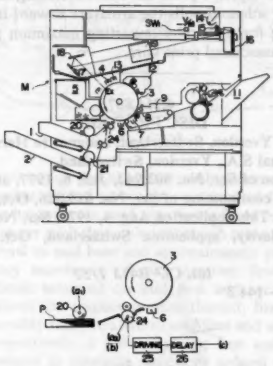
the movable scan member being held stationary in the second scan mode in a position such as to focus a light image of a linear portion of the document on an exposure portion of the platen onto the photoconductive member, the conveyor means comprising an endless belt, first and second rollers spaced on opposite sides of the exposure portion respectively for pressing the belt and document against the platen and a third roller spaced between the first and second rollers over the exposure portion, the third roller holding the belt away from the exposure portion, the conveyor means further comprising a white guide means disposed between the third roller and the exposure portion, the document being moved between the guide means and the platen.

4,214,833

OPERATION TIMING CONTROL SYSTEM FOR MECHANICAL APPARATUS OPERABLE UNDER PROGRAM CONTROL

Tateomi Kono, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 22, 1979, Ser. No. 23,091
Claims priority, application Japan, Apr. 10, 1978, 53-42314
Int. Cl.[2] G03G *15/00*
U.S. Cl. 355—14 C **5 Claims**



1. In a mechanical apparatus having a plurality of mechanisms each of which is independently operable, means for driving the respective mechanisms, and mechanism starting means for starting the operation of at least one of the mechanisms in the midst of an operation of the mechanical apparatus, a means for controlling the timing of operation of said one of said mechanisms, said controlling means comprising:

a program controlling device for said mechanical apparatus having a timer means set for a predetermined time which is set in the program of said program controlling device as a numerical data and which is such as to end at a time earlier than the time for the proper operation of said mechanism starting means;

apparatus starting means for starting the operation of the mechanical apparatus;

timer starting means connected between said apparatus starting means and said timer means for starting the operation of said timer means at the time of the start of operation of the mechanical apparatus;

starting signal generating means forming part of said program controlling device and operated by said timer for generating a starting signal for said one of the mechanisms when said predetermined time has elapsed; and

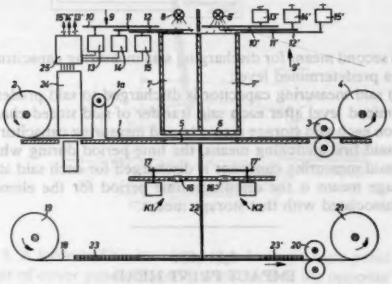
delay means connected between said starting signal generating means and said mechanism starting means for receiving said starting signal for starting the operation of said mechanism starting means and supplying it to said mechanism starting means after a time delay, said delay means including an adjusting means for adjusting the delay time.

4,214,834

PHOTOGRAPHIC COPYING MACHINE

Günter Findeis, Sauerlach; Wolfgang Zahn, Munich, and Klaus Weber, Leverkusen, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 74,116
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1978, 2840049
Int. Cl.[2] G03B *27/44*
U.S. Cl. 355—46 **7 Claims**



1. A photographic copying machine for a strip of photographic originals, comprising means transporting the strip of originals along a predetermined transport path; plural copying stations located along the transport path for concurrent copying of respective ones of plural originals of the transported strip; means transporting copying medium along a predetermined transport path such that originals located at the plural copying stations are concurrently imaged onto the copying medium; and automatic exposure control means operative for effecting concurrent exposure of plural originals located at respective ones of the plural copying stations.

4,214,835

SPECTROMETER SEQUENTIAL READOUT SYSTEM

Cees J. Roos, 'S Gravenzande, Netherlands, assignor to Baird Corporation, Bedford, Mass.

Continuation-in-part of Ser. No. 803,617, Jun. 6, 1977, Pat. No. 4,140,394. This application Jan. 2, 1979, Ser. No. 150
Int. Cl.[2] G01J *3/38*
U.S. Cl. 356—306 **10 Claims**

1. In a direct reading spectrometer for dispersing light from an excited specimen into its characteristic spectrum, an apparatus for generating data signals related linearly to the concentration of elements in said specimen, said apparatus comprising:

(a) a plurality of photocells mounted on said spectrometer for receiving different portions of said spectrum, each of said photocells converting light energy from a selected portion of the spectrum into electrical energy;

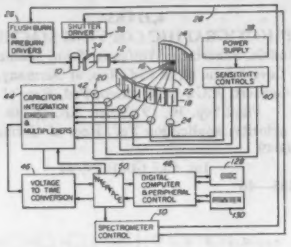
(b) a plurality of storage means operatively connected to said photocells for storing an unknown electrical charge corresponding to the intensity of the monitored spectrum portion, each one of said storage means being connected to only one of each of said photocells, one of said storage means operatively connected to one of said photocells at a

reference position for storing a charge corresponding to the intensity of a reference portion of said spectrum;

(c) a measuring capacitor;

(d) first means for controlling the sequence of operation of the parts of the apparatus;

(e) first switching means controlled by said first means and connected between said storage means and said measuring capacitor for sequentially transferring said stored charge on said storage means to said measuring capacitor; and



(f) second means for discharging said measuring capacitor to a predetermined level;

(g) said measuring capacitor is discharged to said predetermined level after each said transfer of said stored charge on each said storage means to said measuring capacitor by said first switching means, the time period during which said measuring capacitor is discharged for each said storage means is the discharge time period for the element associated with that storage means.

4,214,836

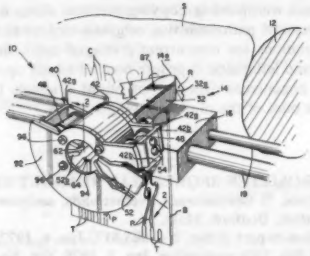
IMPACT PRINT HEAD

Cheng H. Wang, Newton, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 24, 1978, Ser. No. 889,886

Int. Cl.[2] B41J 3/12

U.S. Cl. 400—124 **10 Claims**



1. An impact print head for a matrix printer of the type including a housing, a set of print wires extending along the housing, means for slidably positioning the print wires in the housing, a set of actuators mounted on a frame assembly for moving the print wires between respective extended and retracted positions, each actuator including a solenoid connected to the frame assembly and a spring arm positioned opposite the solenoid and being connected to the frame assembly, said frame assembly, spring arm and solenoid comprising an electromagnetic circuit, the improvement wherein means are provided for preloading each spring arm toward its associated solenoid and a permanent magnet is associated with each spring arm and positioned outside the electromagnetic circuit including that spring arm for biasing each preloaded spring arm away from its associated solenoid so as to create a gap between said arm and said solenoid, the polarities of the magnetic pole and solenoid pole on opposite sides of each spring arm upon energization of the solenoid being of the opposite sense so as to maximize the magnetic flux density in said air gap whereby the energized solenoid exerts maximum pulling force on the spring arm which force is supplemented by the force due to the preloading of that spring arm.

10. An impact print head for a matrix printer of the type including an elongated housing, one end of said housing constituting the working end of the head, a multiplicity of elongated print wires positioned in the housing, corresponding first ends of said wires being arranged in a selected configuration at said one end of the housing, each said wire being slidable individually between a first position wherein its said first end is retracted into said one housing end and a second position wherein its said first end projects from said one housing end, means in the housing associated with the opposite ends of said wires for moving said wires between their said positions, said moving means including an array of solenoids mounted in the head, the number of solenoids corresponding to the number of print wires, a set of armatures made of ferromagnetic material, each armature having one end secured to the head adjacent a solenoid and its opposite end positioned opposite said opposite end of a print wire, an intermediate portion of each armature spanning and being spaced from its adjacent solenoid core end so that when the solenoid is energized momentarily, the spanning armature is pulled toward the solenoid so as to urge the associated print wire momentarily to its second position, the improvement wherein magnetic shunt means are spaced from each armature on the opposite side thereof from the associated solenoid for concentrating the magnetic field produced by said solenoid when energized so that a maximum number of flux lines are intercepted by the armature spanning said solenoid whereby the solenoid pulls the armature toward it with maximum pulling force thereby imparting maximum printing energy to the associated print wire.

4,214,837

DISC PRINTERS

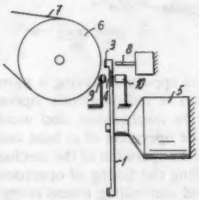
Eric Bacher, Yverdon, Switzerland, assignor to Hermes Precisa International S.A., Yverdon, Switzerland

Continuation of Ser. No. 803,942, Jun. 6, 1977, abandoned, which is a continuation of Ser. No. 619,826, Oct. 6, 1975, abandoned. This application Aug. 4, 1978, Ser. No. 931,268

Claims priority, application Switzerland, Oct. 16, 1974, 13848/74

Int. Cl.[2] B41J 1/32

U.S. Cl. 400—144.3 **13 Claims**



1. In a disc printer having a type character supporting disc rotatably mounted about an axis, type character supporting arms on said disc and extending radially about said disc and having type character supporting portions at their outer ends supporting type characters in relief, said characters having widths and sizes ranging from small to large, the outer ends of all of said character supporting portions being equally spaced apart around the entire disc, said character supporting portions being of varying widths, said widths being proportional to the widths of the type characters, whereby the size and inertia of the disc are reduced to a minimum, and hammer means for striking individual ones of said type characters against a printing surface for printing, indicating means associated with said

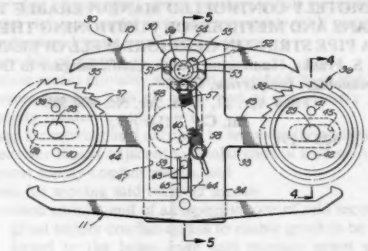
support disc for indicating the angular printing position of each said type character, and reading means for reading said indicating means and for providing therefrom a signal to said hammer means for controlling the printing of each character so as to obtain a uniform distribution of the printed characters on the printed copy, said indicating means associated with each said type character and comprising means for indicating at least one printing characteristic of the associated said type character for causing printing that is dependent on said printing characteristic, said printing characteristic being the force, dependent on the area of each type character, with which said hammer means are to strike a respective said type character, said indicating means comprising an indicating structure formed on each arm, each indicating structure having a predetermined size responsive to said reading means which said reading means senses to thereby send signals to control the corresponding hammer force provided by said hammer means.

4,214,838

ADVANCE AND TRANSFER MECHANISM FOR INKED RIBBON OR THE LIKE

Jerzy R. Gassowski, Burbank, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,047
Int. Cl.³ B41J *33/48*
U.S. Cl. 400—220.1 **14 Claims**



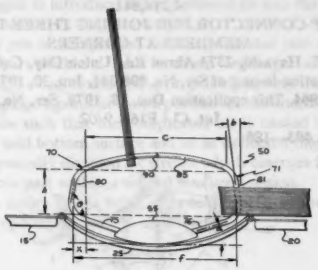
1. In a printer or the like, the combination comprising: a base; a member guided to reciprocate on said base; first and second pins having axes, said pins being fixed relative to said base in a manner such that a plane through said axes is approximately normal to said base and approximately parallel to said reciprocatory movement of said member; first and second ratchet wheels mounted on said first and second pins and rotatable about the respective axes thereof; first and second spools releasably fixed relative to said first and second ratchet wheels, respectively; a ribbon having first and second end portions wound in opposite directions around said first and second spools, respectively, said ribbon having an intermediate portion, said base having means to guide said ribbon intermediate portion; a first arm pivoted from said member spanning a first side of said ratchet wheels; a second arm pivoted from said member spanning a second side of said ratchet wheels; first pawls on respective ends of the first and second arms for selectively engaging and turning said first ratchet wheel; second pawls on the opposite ends of said first and second arms for selectively engaging and turning said second ratchet wheel; means mounted between said base and said member to reciprocate said member; transfer means linking said first and second arms and being responsive to reciprocation of said member during increased tension on said ribbon for determining which of said first and second ratchet wheels is turned by spreading the first pawl on each of said arms out of contact with said first ratchet wheel and for placing said second pawls in position to engage said second ratchet wheel in response to said increased tension being caused when the spool fixed relative to said second ratchet wheel runs out of ribbon and by spreading the second pawl on each of said arms out of contact with the second ratchet wheel and for placing said first pawls in position to engage said first ratchet wheel in response to said increase in tension being caused when the spool fixed relative to said first ratchet wheel runs out of ribbon; and means responsive to reciprocation of said member to cause one of said ratchet wheel engaging pawls on each of said arms to engage the appropriate ratchet wheel alternately to rotate the ratchet wheel step-by-step in successive increments in the same direction therearound, one of said ratchet pawls always being in contact therewith.

4,214,839

LOOSE LEAF BINDER

Robert F. Sheehan, Granby, and Raymond T. Cassidy, Ashfield, both of Mass., assignors to National Blank Book Company, Inc., Holyoke, Mass.

Filed Nov. 6, 1978, Ser. No. 958,024
Int. Cl.² B42F *3/04*
U.S. Cl. 402—31 **8 Claims**



1. A loose leaf binder of the type having a back panel and a pair of cover panels hingedly connected to the opposite edges of said back panel and with a ring mechanism disposed within said back panel and including longitudinally spaced pairs of mating ring segments movable for opening and closing said ring mechanism, said ring segments when closed defining non-circular rings comprising: a pair of leg portions each extending outwardly and upwardly from said back panel to a point adjacent a separate one of said opposite edges of said back panel; a pair of arms of unidirectional slope extending upwardly and inwardly from the outer ends of each of said leg portions and an arcuate rail bridging the upper ends of said arms, a straight line disposed between points of connection of said rail and said arms defining the loose leaf holding capacity of said binder.

4,214,840

QUICK-RELEASE COUPLER

John H. Beales, Langley, Canada, assignor to J. H. Beales Steel Fabricators, Ltd., Langley, Canada

Filed Jan. 18, 1979, Ser. No. 4,373
Int. Cl.³ F16D *3/30*; F16L *17/00*
U.S. Cl. 403—31 **9 Claims**

1. A coupler for removably coupling a tool attachment at an end of a supporting arm, said coupler comprising:

(a) a body member;

(b) first and second pivot pin means carried by said body member for pivotally supporting said body member at said end of said arm, said first pivot pin means being disposed at one end of said body member and extending transversely between opposed sides of said body member, said second pivot pin means being disposed intermediate said one end and a second end of said body member and extending between said opposed sides of said body member parallel to said first pivot pin; and,

(c) latch means for removably latching said coupler to said tool attachment, said latch means including:

(i) a latch member pivotally supported by said body mem-

ber by pivot pin means disposed towards said second end of said body member and extending between said opposed sides of said body member parallel to said first and second pivot pin means, said latch member for latchingly engaging said tool attachment in an engaged position such that when said body member tends to pull away from said tool attachment the latch member acts in tension to restrain such movement; and,

(ii) latch retention means for normally retaining said latch member in the engaged position, said latch retention means including compression spring biasing means carried by said body member for biasing said latch member in the engaged position and being responsive to an applied force for disengaging said latch member from said engaged position thereby permitting coupling and decoupling of said tool attachment from said supporting arm.

4,214,841

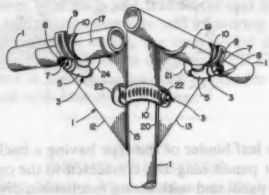
CLAMP-CONNECTOR FOR JOINING THREE TUBULAR MEMBERS AT CORNERS

Henry T. Hayashi, 2373 Abreu Rd., Union City, Calif. 94587

Continuation-in-part of Ser. No. 808,044, Jun. 20, 1977, Pat. No. 4,136,984. This application Dec. 18, 1978, Ser. No. 970,558

Int. Cl.[2] F16B 9/02

U.S. Cl. 403—188 **2 Claims**



1. A structural system comprising:

a. three structural circular elongated tubular members (1);

b. a bracket member including:

1. a first triangular web member (12) formed with a straight first inner edge (6) and a straight first edge (16) positioned at right angles to one another and also formed with a first opening (24) adjoining said straight first edge (16) and a second opening (23) adjoining said first inner edge (6),

2. a second triangular web member (13) formed with a straight second inner edge (11) and a straight second edge (18) positioned at right angles to one another and also formed with a third opening (12) adjoining said straight second edge (18) and a fourth opening (22) adjoining said second inner edge (11),

3. a first circular quarter-arc elongated curved portion (14) for receiving one of said tubular members (1) having a straight outer edge (15) connected to first inner edge (6) of said first web member (12) and also having a second inner edge (20) joined to said second inner edge (11) of said second web member (13) so that said first and second web member are connected at right angles to one another,

4. a second elongated circular curved arc portion (17) for receiving another of said tubular members (1) and connected along an edge to said first edge (16) of said straight first web member (12) and positioned at right angles to said first curved portion (14),

5. a third elongated circular curved arc portion (19) for receiving still another of said tubular members (1) and connected along an edge to said straight second edge (18) of said second web member (13) and positioned at right angles to said first and second curved portions (14), (17),

6. said curved portions are positioned with respect to said web members so that said structural circular tubular members cradled in said second and third curved portions intersect but said structural tubular member cradled in said first curved portion is not intersected by either of said structural tubular members in said second or third curved portions.

c. a plurality of clamp members (3), each including:

1. a strap member (10) formed with a plurality of slite (9) and inserted through said openings (21–24) and encircling said curved portions (14), (17), (19) and said tubular members (1) cradled therein.

2. a housing (5) formed with a U-shaped member for receiving and holding said strap (10),

3. a worm gear (4) journaled for rotation within said housing (5) for engaging said slits (9) in said strap (10) and also formed with a tool engaging head for manual rotation of said worm gear;

d. said clamp members are selected so that a hand tool is capable of pulling said straps (10) in such close fitting frictional engagement around said tubular members (1) and said curved portions (14), (17), (19) that said structural tubular members cannot move with respect to said bracket member.

4,214,842

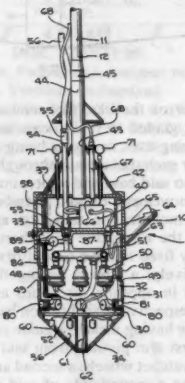
REMOTELY CONTROLLED MANEUVERABLE TOOL MEANS AND METHOD FOR POSITIONING THE END OF A PIPE STRING IN OFFSHORE WELL OPERATIONS

Neal S. Franks, Huntington Beach, Calif., assignor to Deep Oil Technology, Inc., Irvine, Calif.

Filed Apr. 27, 1978, Ser. No. 900,500

Int. Cl.[2] E21B 7/12

U.S. Cl. 405—191 **6 Claims**



1. A maneuverable tool means for attachment to the end of a pipe string to maneuver the position of the pipe string end during lowering to and for alignment with a well part, comprising

a tool body member adapted to be connected to the end of a pipe string and having a wall defining a chamber;

thrust means including thrust valve means within said chamber, said thrust means having a discharge nozzle externally of said wall and directed radially laterally of the body member;

fluid pressure means in communication with the thrust means for selectively imparting thrust forces to move the tool body member and the end of the pipe string;

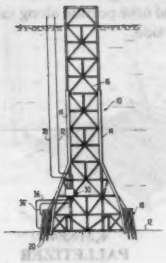
and remote control means for said fluid pressure means and operation of said thrust valve means at said tool body member.

4,214,843

SUBSEA GROUT DISTRIBUTOR

Heinz K. Rohde, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Filed Jan. 3, 1979, Ser. No. 759
Int. Cl.² E02B 17/02
U.S. Cl. 405—225 21 Claims



1. A grout distributor for supply grout sequentially to a plurality of subsea grout-receiving locations from a primary grout supply conduit means, said distributor comprising:

a plurality of secondary grout supply conduit means having inlet ends and outlet ends communicable with respective ones of said grout receiving locations,

a movable carriage,

receiver means movably mounted on said carriage and being communicable with an outlet end of the primary grout supply conduit means,

means for moving said carriage to sequentially position said receiver means adjacent said inlet ends of said secondary grout supply conduit means, and

means for moving said receiver means:

toward an inlet end of a respective one of said secondary grout supply conduit means to enable grout to be transferred to the latter from said primary grout supply conduit means, and

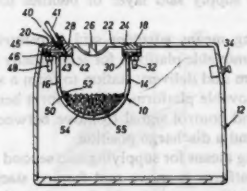
away from said last-named inlet end, to enable said carriage to be displaced relative thereto.

4,214,844

DISPENSING DEVICES

David J. Cockayne, Sutton Coldfield, England, assignor to Modular Automation Limited, West Midlands, England

Filed Apr. 17, 1978, Ser. No. 897,135
Claims priority, application United Kingdom, Apr. 19, 1977, 16119/77; Aug. 10, 1977, 33630/77
Int. Cl.² B65G 51/02
U.S. Cl. 406—123 16 Claims



1. A compressed air operated dispenser device for separating and dispensing helical coil springs, said dispenser device comprising:

(a) a dispensing chamber into which a quantity of the coil springs can be introduced, so as to lie loosely in the bottom part thereof,

(b) air supply means for blowing compressed air intermittently into the dispensing chamber thereby to create turublence effective to agitate and carry upwards at least some of the coil springs therein,

(c) outlet means in the upper part of the chamber comprising at least one outlet aperture defined by an exposed open end of an outlet passage facing inwardly into the chamber of such size as to permit individual coil springs entrained in the air flow to pass successively in single file therethrough in relative endwise oriented and aligned relationship to discharge together with the compressed air, and

(d) abutment means disposed within said dispensing chamber and against which said coil springs are forcibly directed while entrained in the air flow,

(e) said dispensing chamber is formed by a trough having opposite side walls and a bottom section which extends between said side walls and which provides an interior bottom surface,

(f) said air supply means comprises inlet means adapted and arranged to introduce the compressed air into the dispensing chamber in the form of jets,

(g) said jets of compressed air being directed into said bottom part within a first localized region so as to pass through a bed of said coil springs lying loosely therein and to impinge against at least a portion of said interior bottom surface such that the compressed air is caused to sweep over said bottom surface and to be deflected thereby into an upwardly directed air stream which emerges from said bottom part within a second localized region,

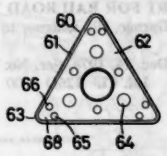
(h) the outlet means being disposed directly in the path of said upwardly directed air stream.

4,214,845

THROW AWAY INSERTS

Yoshikatsu Mori, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Japan

Filed Aug. 7, 1978, Ser. No. 931,442
Claims priority, application Japan, Aug. 5, 1977, 52-105388[U]; Aug. 24, 1977, 52-113578[U]
Int. Cl.² B23B 27/22; B26D 1/00
U.S. Cl. 407—114 5 Claims



1. A polygonal throw away insert comprising:

an insert body having two opposite, parallel major surfaces and a plurality of sides joining said major surfaces, adjacent said sides joining each other to form rounded corners;

cutting edges being formed along lines where each of said sides join each of said surfaces;

a ramp extending from each of said cutting edges downwardly towards the center of at least one of said two major surfaces of said insert body;

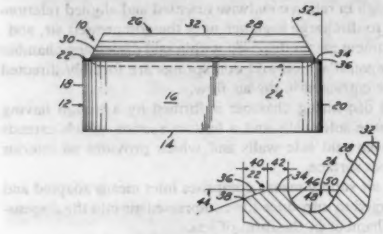
a pair of first chip breaking projection means extending upwardly from said ramp adjacent each said corner of said insert body in a symmetrical relationship with respect to a bisector of said corner; and

second chip breaking projection means separate from said first projection means and extending upwardly from said ramp at a position on said bisector and further spaced from said corner than said pair of first projection means.

4,214,846
HEAVY DUTY INSERT

Rolf H. Kraemer, Gurnee, Ill., assignor to Fansteel Inc., North Chicago, Ill.

Filed Sep. 26, 1978, Ser. No. 946,031
Int. Cl.[2] B26D 1/12
U.S. Cl. 407—114 18 Claims

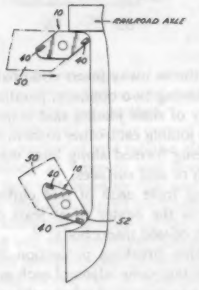


1. A cutting insert comprising a unitary body of a hard wear resistant material having a bottom, upstanding side walls, end walls, and rounded corners in a generally rectangular configuration, cutting edges adjacent to and extending around the periphery of said side walls and rounded corners, a mesa spaced inwardly of said cutting edges and said walls, and a chip breaker groove extending generally longitudinally of each side wall between each of said cutting edges and said mesa, each said cutting edge having a land immediately adjacent its associated groove and extending generally transversely to its associated side wall, a face between and inclined to both said land and its associated side wall, and a generally arcuate surface interconnecting said face and its said associated side wall, each said groove in cross-section having a first portion immediately adjacent the land of its associated cutting edge and extending generally inwardly and downwardly thereof below the plane of such land and a second portion inwardly of said first portion extending generally inwardly and upwardly from the bottom of such groove, and said mesa having a wall inclined inwardly from an associated groove and extending upwardly to at least the plane of the land of the cutting edge associated with such groove.

4,214,847
INSERT FOR RAILROAD TOOLS

Rolf H. Kraemer, Gurnee, Ill., assignor to Fansteel Inc., North Chicago, Ill.

Filed Dec. 14, 1978, Ser. No. 969,462
Int. Cl.[2] B26D 1/00
U.S. Cl. 407—114 2 Claims

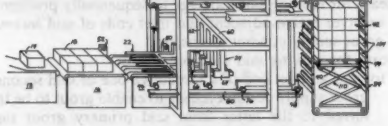


1. A cutting insert for light duty machining of railroad axles and the like which comprises a flat, wafer-like, insert body having a substantially diamond shape with flat, parallel, upper and lower surfaces joined by side edges perpendicular to said surfaces, and a rounded nose portion connecting the sides merging toward the low angle corners of the diamond shape, and a shallow, elongate, narrow chip breaker groove formed into at least one of the flat surfaces of said insert originating inside said nose portion and extending along one side of said insert away from said nose portion and parallel to but spaced from a straight side diverging from said nose portion to leave a flat land between said groove and said one side, said groove extending from said nose portion along said side about one-fifth the length of said side.

4,214,848
PALLETIZER

William G. A. Verwey, Phoenix, and Stephen Stanton, Baltimore, both of Md., assignors to Precision Industries, Inc., Baltimore, Md.

Filed Feb. 25, 1977, Ser. No. 772,143
Int. Cl.[2] B65G 57/09
U.S. Cl. 414—77 51 Claims



1. Apparatus for organizing and arranging layers of one or more bundles into stacks, comprising:

means responsive to a first control signal for supplying a layer of bundles to a transfer station at a loading elevation;

means for elevating and transferring said layer of bundles from said transfer station to a delivery station at a transferring elevation which is greater than the maximum elevation of the stack to be formed, said elevating and transferring means maintaining said layer substantially horizontally disposed during said elevating and transferring operation, said elevating and transferring means being operable to supply said first control signal to said supplying means to supply said layer of bundles to said transfer station;

stack-forming means adjacent said transferring means including a movable platform for sequentially receiving said layers from said delivery station to form a stack of layers on said movable platform, said platform being responsive to a second control signal to move between a receiving position and a discharge position;

first actuating means for supplying said second control signal to said platform to move said formed stack to said discharge position so that said formed stack may be discharged; and

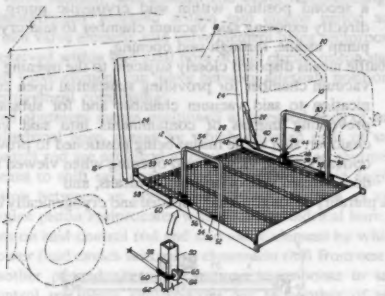
said first actuating means also operating to supply a third control signal to said supplying means and a fourth control signal to said transferring means to interrupt the operation of said supplying means and said transferring means until said platform returns to said receiving position and is ready to receive the next layer of bundles from said delivery station.

4,214,849

RETRACTABLE RAIL FOR A VEHICLE LIFT

Harold A. Downing, Hutchinson, Kans., assignor to Collins Industries, Inc., Hutchinson, Kans.

Filed Nov. 13, 1978, Ser. No. 959,760
Int. Cl.[2] B60P 1/46
U.S. Cl. 414—545 7 Claims



1. A retractable rail for a vehicle lift, the lift having a platform disposed substantially in a vertical position in a door opening of a vehicle, the platform used for loading objects thereon when the platform is lowered into a horizontal position adjacent the door opening or to a position on the ground surface adjacent the vehicle, the rail comprising:

a first hand support for gripping when the platform is lowered into a horizontal position;

a first post having an upper end portion attached to said first hand support and a lower end portion pivotally attached to the platform;

retraction means attached to said first post and the platform for lowering said first post and said first hand support on the platform when the platform is raised into a vertical position in the door opening; and

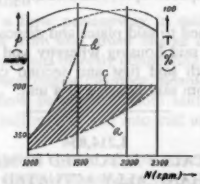
extension means attached to said first post and the lift for raising said first post and said first hand support upwardly above the platform when the platform is lowered into a horizontal position.

4,214,850

VARIABLE-CAPACITY RADIAL TURBINE

Shojiro Sato, Yokohama, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 23, 1978, Ser. No. 908,707
Claims priority, application Japan, Oct. 12, 1977, 52-121488; Apr. 11, 1978, 53-41736
Int. Cl.[2] F01D 17/08, 17/12
U.S. Cl. 415—49 4 Claims



1. Variable capacity radial turbine apparatus for driving a rotary blower or the like, comprising

(a) a hollow casing containing

(1) a central chamber having an axially arranged outlet;

(2) a generally helical scroll-shaped chamber arranged concentrically about said central chamber, said scroll-shaped chamber having a tangentially arranged inlet; and

(3) means defining an opening between said chambers, whereby pressure fluid from said scroll-shaped chamber may be introduced into said central chamber for driving an impeller arranged therein;

(b) control means pivotally connected with said casing for pivotal movement about an axis normal to the longitudinal axis of said central chamber for controlling the effective cross-sectional area of said opening; and

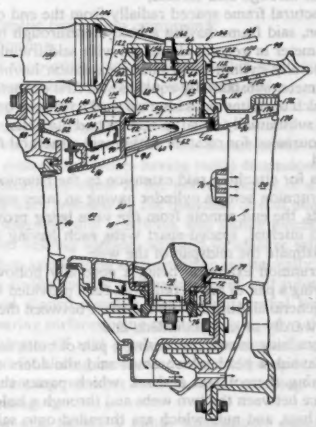
(c) pressure-responsive piston-motor means for adjusting the position of said control means to throttle said opening, whereby the size of said opening may be regulated as a function of the inlet pressure of said turbine.

4,214,851

STRUCTURAL COOLING AIR MANIFOLD FOR A GAS TURBINE ENGINE

Eugene N. Tuley, Hamilton; Delmer H. Landis, Jr., Loveland, and Paul W. Lozier, North Bend, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Apr. 20, 1978, Ser. No. 898,060
Int. Cl.[2] F01D 5/18, 9/04
U.S. Cl. 415—115 11 Claims



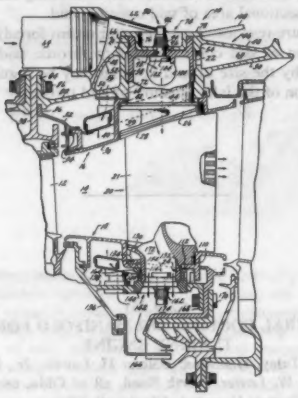
11. A gas turbine engine comprising a fan for pressurizing a quantity of air; a compressor for further pressurizing air from said fan; a high pressure turbine drivingly connected to said compressor, a low pressure turbine drivingly connected to said fan, said low pressure turbine including a row of variable angle stator vanes each having a hollow airfoil portion connected to a trunnion; a cooling air manifold generally surrounding said low pressure turbine and easily cast as a generally annular, integral unit having an internal, generally annular plenum formed between two concentric walls, means for supporting said vane trunnions with both of said walls thereby providing unencumbered radial access to said vane trunnions for control of said stator vanes; means for routing air from said compressor to said manifold plenum, and means for routing air from said plenum and into said airfoils.

4,214,852

VARIABLE TURBINE VANE ASSEMBLY

Eugene N. Tuley, Hamilton; Delmer H. Landis, Jr., Loveland, and Paul W. Lozier, North Bend, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Apr. 20, 1978, Ser. No. 898,248
Int. Cl.[2] F01D 5/18, 9/04
U.S. Cl. 415—115 4 Claims



1. A turbine assembly comprising:

a vane having a trunnion on one end of a first diameter;

a band which is inserted around the trunnion to define a flow path through said turbine;

a structural frame spaced radially from the end of the trunnion, said frame having a hole therethrough of a second diameter in general alignment with said trunnion; and

a generally cylindrical trunnion extension having an inner diameter substantially equal to said first diameter and into which the trunnion is inserted, and having an outer diameter substantially equal to said second diameter, and which is journaled for rotation within said structural frame hole; and

means for attaching said extension to the trunnion;

said trunnion being a cylinder having an inner wall and two ends, the end remote from the vane being provided with two internal, spaced-apart webs each having a shoulder proximate the midspan of the web;

said trunnion extension being a generally hollow cylinder having a pair of projecting lugs, each provided with a hole in general alignment with the space between the two webs outwardly of said shoulders; and

said attaching means comprising a pair of bolts, each having a flat-sided head which abuts said shoulders to prevent turning thereof and a shank which passes through the space between the two webs and through a hole in one of the lugs, and nuts which are threaded onto said bolts to capture the webs and lugs therebetween.

4,214,853

EVACUATION APPARATUS WITH CRYOGENIC PUMP AND TRAP ASSEMBLY

Gunard O. B. Mahl, San Francisco, Calif., assignor to CHA Industries, Menlo Park, Calif.

Filed May 15, 1978, Ser. No. 905,652
Int. Cl.[2] F04F 9/06
U.S. Cl. 417—154 30 Claims

1. An evacuation apparatus comprising

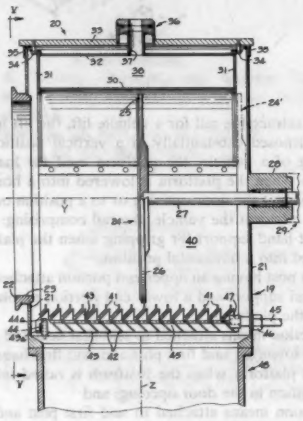
a vessel defining a vacuum chamber therein,

vacuumizing means communicating with an opening to said vacuum chamber for selectively drawing a vacuum therein comprising cryogenic pump means disposed closely adjacent to said opening and defined by substantial cryogenically cooled trap surfaces for freezing-out water vapor from air evacuated from said vacuum chamber, said opening being common to said vacuum chamber and to said cryogenic pump means,

valve means for selectively opening or closing the opening to said vacuum chamber and movable from a first position within said cryogenic pump means closing said opening to a second position within said cryogenic pump means directly exposing said vacuum chamber to said cryogenic pump means, through said opening,

baffle means disposed closely adjacent to the opening to said vacuum chamber for providing substantial open communication to said vacuum chamber and for substantially preventing ingress of contaminants into said vacuum chamber, said baffle means being positioned to provide an optically dense view of said opening when viewed from a downstream side of said baffle means, and

a plurality of longitudinally spaced and cryogenically cooled



fins mounted in nested relationship within said baffle means and disposed in out-of-contact relationship therewith, said fins being positioned to provide an optically dense view of the downstream side of said baffle means when viewed from said openings.

22. A cryogenic pump adapted for use in an evacuation apparatus comprising

a housing defining an opening to a vacuum chamber,

a plurality of metallic plates defining a first chamber therein communicating with said vacuum chamber through said opening and further defining a second chamber at least partially surrounding said first chamber and adapted to be at least partially filled with a cryogenic liquid, said plates disposed in spaced-apart relationship relative to said housing, and

a cover attached to said plates and disposed in sealing relationship on said housing whereby said cover and plates, defining both said first and second chambers, may be removed from said housing as a unit.

4,214,854

HYDRAULICALLY ACTUATED PUMP ASSEMBLY HAVING MECHANICALLY ACTUATED VALVE MEANS

George K. Roeder, P.O. Box 4335, Odessa, Tex. 79761

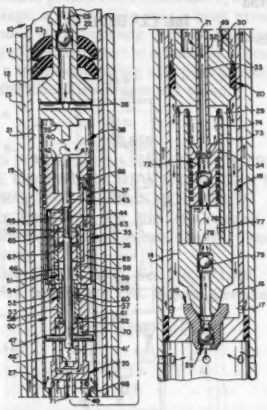
Division of Ser. No. 689,576, May 24, 1976, Pat. No. 4,118,154.
This application Sep. 11, 1978, Ser. No. 941,222
Int. Cl.[2] F04B 17/00, 35/00; F01L 15/12; F01B 7/18
U.S. Cl. 417—402 11 Claims

1. In a downhole, fluid-actuated pump assembly having an engine and a production pump, with the production pump

having a formation fluid inlet and a produced fluid outlet; and, with the engine having a power fluid inlet and a spent power fluid outlet; said engine having a cylindrical bore, an engine piston reciprocatingly received within said cylindrical bore and dividing said cylindrical bore into upper and lower engine chambers; said engine piston having an axial bore; a control rod, a valve element, said control rod being reciprocatingly and concentrically received within said engine piston and within said valve element; said valve element being reciprocatingly received within said axial bore of said engine piston such that said valve element can move between alternate positions; the improvement comprising:

spaced abutment means positioned at opposed ends of said cylindrical bore, means by which opposed ends of said control rod are arranged to contact said spaced abutment means to shift said control rod respective to said engine piston between an upper and a lower position as said engine piston reciprocates within said cylindrical bore;

means on said control rod and said valve element by which power fluid causes said valve element to shift from one to another of said alternate positions in response to said control rod being shifted from one to another of said upper and lower positions;



said production pump includes a production barrel, a production piston reciprocatingly received within said barrel, a hollow rod connecting said production piston to said engine piston, said production piston dividing said barrel into upper and lower production chambers; means connecting said upper production chamber directly to said production outlet;

means forming a flow passageway in said engine piston which extends from said lower engine chamber to said valve element, means directly connecting the power fluid inlet to said lower engine chamber; means forming a spent power fluid flow passageway from said valve element, through said hollow rod, and into said upper production chamber;

a passageway formed in said engine piston by which said upper engine chamber is connected to said valve element to provide for reciprocating said piston in a downward direction within said cylindrical bore; whereby:

said lower engine chamber is always connected to said power fluid source to thereby enable the engine piston to reciprocate the production piston in an upward direction when said upper engine chamber is connected to said lower engine chamber.

4,214,855

PERISTALTIC TYPE PUMP

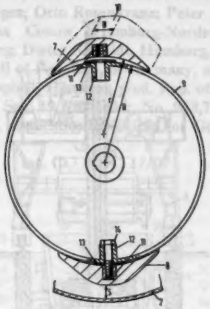
Jan W. Gerritsen, Raadhuisstraat 75, Alphen an der Rijn, Netherlands

Filed Jun. 29, 1978, Ser. No. 920,489

Claims priority, application Netherlands, Dec. 21, 1977, 7714189

Int. Cl.² F04D *43/12*; F24B *45/08*

U.S. Cl. 417—477 **4 Claims**



1. A peristaltic type pump comprising:

a pump housing;

a circular supporting track mounted within said housing;

a pump hose positioned within said track; and

a pumping member rotatably mounted within said housing, said pumping member having a substantially elliptical shape and being formed at two diametrically opposite points with sliding pieces having radial dimensions which are substantially equal to the internal radius of said supporting track reduced by the thickness of said pump hose in the squeezed shut condition, said sliding pieces having flattened bearing surfaces adapted to squeeze said pump hose shut, said bearing surfaces being substantially perpendicular to the ends of the major axis of said substantially elliptical shaped member, the circumferential lengths of said bearing surfaces being substantially equal to the internal diameter of said pump hose, bearing surfaces being adapted for sliding movement over said pump hose when said pumping member rotates, said pumping member comprising:

a circular disc having a radius substantially equal to the internal radius of said supporting track minus the outer diameter of said pump hose, said sliding pieces being individual sickle-shaped elements mounted on said disc in diametrically opposed relationship, said flattened bearing surfaces being disposed on the convex exterior surface of each said sliding piece, the surface of each said sliding piece facing said disc having a radius of curvature which is smaller than that of said disc;

at least one spacer sheet positioned between said disc and said facing surface of said sliding piece, the thickness of said sheet being variable;

an internally threaded bush mounted in said sliding piece; and

a bolt engaging said disc and threadedly engaging said bush in said sliding piece and holding said sliding piece and said spacer sheet onto said disc.

4,214,856

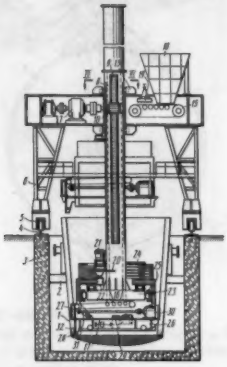
APPARATUS FOR LINING LADLES

Serafim V. Kolpakov, ulitsa Ryazanskaya, 12; Zinovy L. Gurkov, ulitsa Parkovaya, 4, kv. 42; Oleg L. Bondarenko, ulitsa M. Gorkogo, 13/2, kv. 1; Vladimir V. Valtsov, ulitsa Anosova, 2, kv. 25; Alexandr M. Pozhivanov, ulitsa Zhelyabova, 16, kv. 8; Eduard D. Gugnin, ulitsa Gagarina, 167, kv. 8; Stanislav V. Radilov, ulitsa Tereshkovoi, 38b, kv. 34, and Alexandr A. Bogdanov, ulitsa Parkovaya, 6, kv. 4, all of Lipetsk, U.S.S.R.

Division of Ser. No. 691,079, May 28, 1976, Pat. No. 4,094,938, which is a continuation of Ser. No. 449,466, Mar. 8, 1974, abandoned. This application Apr. 7, 1978, Ser. No. 894,387

Int. Cl.[2] F27D *1/16*

U.S. Cl. 425—60 9 Claims



1. Apparatus for the high-density lining of inner spaces, confined by the inner surface of a ladle and by a back shaping element therein, with a refractory mass along the inner circumferential perimeter of the ladle wall surface and along the entire height thereof, comprising:

at least one blasting means, and means for rotating said blasting means and simultaneously and continuously moving said blasting means radially with respect to the surfaces being lined, together with said back shaping element to thereby obtain a continuous filling of the lining along the ladle wall surface being lined;

feeding means for feeding the refractory mass into spaces confined between the inner surface of said ladle and said back shaping element;

said feeding means including said blasting means and means to apply the fed-in mass to the inner surface with said at least one blasting means in close proximity to the inner ladle perimeter with a force which is applied perpendicularly to the upper surface of the lining layer as the lining is applied;

means to position said back shaping element initially at a distance equal to the initial thickness of the lining in the bottom of the ladle and behind said blasting means free of physical contact from the inner perimeter of said ladle to ensure a predetermined narrow gap being filled with the refractory mass along the ladle wall being lined into said space between said ladle wall and said shaping element;

means for imparting to said blasting means and said back shaping element a continuous circular and continuous vertical movement along the inner perimeter and parallel thereto and along the entire height of said ladle as the lining is completing the perimeter, said back shaping element and said blasting means being moved upwards together and continuously, in addition to and simultaneously with its continuous circular movement along the inner ladle perimeter, to thereby obtain the continuous and a successive filling of the lining along a helical line over the ladle wall surface being lined;

said positioning means including means for maintaining the distance between said blasting means and the upper surface of the lining constant during the vertical movement to create identical conditions for the passage of the refractory mass applied by said blasting means; and,

means for sensing deviations in the level of the upper surface of the lining as the fed-in mass is applied, and means to maintain the distance between said blasting means and the upper surface of the lining constant.

4,214,857

MULTI-ROLL CALENDER

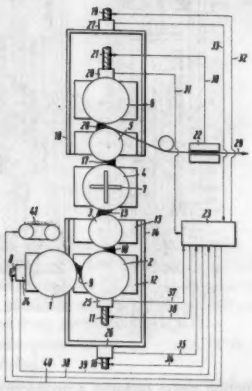
Willi Woeckener; Werner Pawelczyk, and Klaus-Dieter Marquardt, all of Hanover, Fed. Rep. of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hannover-Kleefeld, Fed. Rep. of Germany

Division of Ser. No. 727,529, Sep. 28, 1976, Pat. No. 4,110,387. This application Oct. 13, 1977, Ser. No. 841,706

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1975, 2543738

Int. Cl.[2] B29D *7/14*

U.S. Cl. 425—141 10 Claims



1. A multi-roll calender for producing a sheet of elastomeric material, comprising:

(a) a calender frame;

(b) a series of rolls, and means mounting the ends thereof in said calender frame, said rolls including an intake roll and a series of vertically superimposed rolls, said intake roll being spaced from the lowermost roll of said series of rolls so as to provide a roll gap, all of said superimposed rolls likewise being spaced from vertically adjacent rolls so as to provide variable roll gaps between each adjacent pair of rolls, said roll gaps following one after another in the direction of sequential movement of said sheet during formation thereof;

(c) means associated with said rolls for sensing the pressure of the material in each roll gap of the calender;

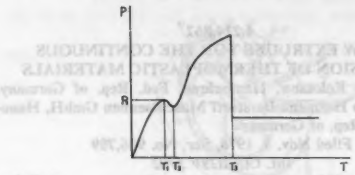
(d) means on opposite ends of certain of said rolls responsive to said sensing means for adjusting the width of each roll gap formed by adjacent rolls to cause the difference between the pressures in said gaps to be as small as is practicable, and

(e) means for maintaining such pressures substantially constant.

4,214,858
INJECTION APPARATUS

Kazumitsu Omori, Handa, Japan, assignor to Kabushiki Kaisha Meiki Seisakusho, Aichi, Japan

Filed Jun. 4, 1979, Ser. No. 46,001
Claims priority, application Japan, Jun. 15, 1978, 53-72750
Int. Cl.² B29F *1/06*
U.S. Cl. 425—145 **3 Claims**

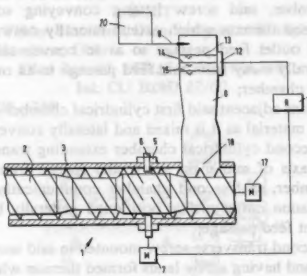


1. In an injection apparatus having a screw which advances to inject a plasticized charge of material from an injection barrel into a mold cavity and retracts while rotating to accumulate a plasticized charge, an injection apparatus providing a monitoring system comprising a pressure transducer which converts a hydraulic pressure in a hydraulic cylinder for injection into a voltage, a means detecting a peak pressure in the hydraulic cylinder while injecting, a means measuring a time from a moment of injection start to a moment of occurrence of said peak, and a means comparing said peak pressure and said time with a respectively predetermined value.

4,214,859
APPARATUS FOR REGULATING THE OUTPUT OF A SINGLE OR TWIN SCREW EXTRUDER FOR PROCESSING PLASTICS MELTS

Dietmar Anders, Hannover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,591
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1977, 2758266
Int. Cl.² B29F *3/06*
U.S. Cl. 425—147 **1 Claim**

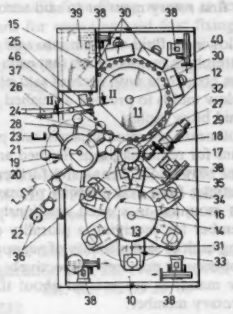


1. Apparatus for regulating the output of an extruder for processing plastics melt, said extruder having an extruder cylinder; an extruder screw disposed in said cylinder; a melt intake opening in said cylinder; a melt container disposed at said intake opening; filling level measuring means for said melt container; a polymerisation system to supply melt to said melt container; a discharge opening for said cylinder; a flow restrictor disposed in said cylinder between said melt intake opening and said discharge opening, said flow restrictor being formed by pins which are radially movable through the wall of said cylinder towards said screw; means for moving said pins; and control means operatively connected between said filling level measuring means and said means for moving said pins, whereby the means for moving said pins and thus the depth of plunge of said pins towards said screw is controlled by said control means in response to the filling level of the material in said melt container, said extruder being so dimensioned with regard to its output capacity that when said flow restrictor is fully open at least the maximum output capacity of the polymerisation system can be processed.

4,214,860
APPARATUS FOR BLOW MOLDING HOLLOW ARTICLES, IN PARTICULAR BOTTLES

Günter Kleimenhagen; Otto Rosenkranz; Peter Albrecht, all of Hamburg; Hans Conow, Hamburg-Norderstedt; Holger Köther, Hamburg; Dieter Schmidt, Hamburg, and Klaus Vogel, Hamburg, all of Fed. Rep. of Germany, assignors to Gildemeister Corpoplast, Hamburg, Fed. Rep. of Germany

Filed Sep. 19, 1978, Ser. No. 943,715
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1978, 2742693
Int. Cl.² B29C *17/07*
U.S. Cl. 425—149 **13 Claims**



1. An apparatus for making hollow articles, in particular bottles from a plurality of parisons of thermoplastic material having a cavity, said apparatus comprising:

a base frame;

a first rotary member rotatably mounted to said base frame;

first support means mounted to the periphery of said first rotary member for rotatably supporting said plurality of parisons;

a plurality of transfer mandrels interposed said first support means and said plurality of parisons, each of said plurality of mandrels having an end portion adapted to receive one of said plurality of parisons, each end portion including seal means for sealing internally of said one of said plurality of parisons, each of said plurality of mandrels further having an opposite end portion and a central bore therethrough, said opposite end portion of each of said mandrels terminating in a gripping portion adapted to communicate with said first support means for a predetermined rotatable movement with said first rotary member;

means for heating said plurality of parisons, said heating means fixed to said base frame and surrounding the periphery of the first rotary member for a predetermined sector, said first rotary member rotably moving said plurality of mandrels and parisons mounted thereon past said means for heating such that said plurality of parisons are heated, each of said plurality of parisons further having a central axis parallel to the central axis of said first rotary member when passing through said predetermined sector;

a second rotary member mounted to said base frame in spaced relationship to said first rotary member, said second rotary member comprising:

an axis of rotation parallel to the axis of rotation of said first rotary member;

second support means mounted to the periphery of said second rotary member to support said plurality of transfer mandrels and parisons;

blow mold means having a plurality of multiple-part blow molds, each of said blow molds radially extending from said central axis of the second rotary member for carrying each of said plurality of said transfer mandrels; and

a plurality of movable expanding mandrel means mounted to said second rotary member for movement therewith, each of said plurality of movable expanding mandrels means having seal means for sealing against each of said plurality of transfer mandrels carried by said plurality of blow mold means, said movable expanding mandrel means each further having a stretching member with a central axis axially aligned with the central axis of the central bore of each of said plurality of transfer mandrels carried by said plurality of blow mold means, said stretching member further being extendable through the central bore of each of said plurality of transfer mandrels into said cavity of each of the plurality of parisons, said stretching member and cavity of each of said parisons defining a space to deliver a blow medium into the cavity of each the parisons;

means for transferring said plurality of transfer mandrels from said first rotary member to said second rotary member;

means for blowing a fluid medium into said space surrounding said stretching member such that each of said plurality of parisons cooperate with each of said plurality of multiple-part blow molds to provide a finished article blown in each of said blow molds;

rotary output means mounted adjacent said plurality of blow mold means for remaining said finished articles from said plurality of blow mold means and further removing said finished articles from said plurality of mandrels; and

input means mounted in spaced relationship to said first rotary member for receiving a plurality of parisons and transferring each of said plurality of parisons to one of said plurality of transfer mandrels respectively as said plurality of transfer mandrels are rotated about the periphery of said first rotary member.

4,214,861

METHOD OF AND AN APPARATUS FOR MAKING PREFORMS FROM A POURABLE SUBSTANCE

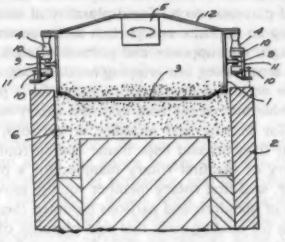
Edmund Munk, and Hermann Henke, both of Oberstenfeld, Fed. Rep. of Germany, assignors to Werzalit-Pressholzwerk J.F. Werz Jr. KG, Oberstenfeld, Fed. Rep. of Germany

Division of Ser. No. 790,615, Apr. 25, 1977, abandoned. This application May 10, 1978, Ser. No. 904,561

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1976, 2618599; May 15, 1976, 2621717; Mar. 4, 1977, 2709467

Int. Cl.[2] B29J *5/02*

U.S. Cl. 425—199 **22 Claims**



1. An apparatus for making preforms from a pourable but at most limitedly flowable substance for subsequent use in producing three-dimensional articles, comprising a mold element having a cavity and an open top; a container element for accommodating a substance, located above said mold element and having a shaped perforated screen arranged on the container element defining a substantially closed forming space between said screen and the mold cavity; and means for vibrating said container element relative to the mold element so that the substance advances through perforations of said screen of said container element into the cavity of the mold element and distributes substantially uniformly in the cavity.

4,214,862

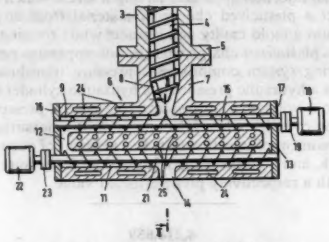
SCREW EXTRUDER FOR THE CONTINUOUS EXTRUSION OF THERMOPLASTIC MATERIALS

Klaus-Dieter Kolossow, Hambuhren, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Nov. 3, 1978, Ser. No. 936,789

Int. Cl.[2] B29F *3/02*

U.S. Cl. 425—204 **2 Claims**



1. A screw extruder for the continuous extrusion of thermoplastic materials, comprising:

(a) a main extruding screw rotatably mounted in a housing therefor, said thermoplastic material being fed to and mixed by said main extruder screw, said housing defining an outlet feed passage at the bottom of said main screw;

(b) a first cylindrical chamber extending transversely to the axis of said main screw and communicating with said outlet feed passage;

(c) a first transverse screw mounted in said first cylindrical chamber, said screw having conveying screw lands formed thereon which extend laterally outwardly from said outlet feed passage so as to convey said material laterally away from said feed passage to an outer end of said chamber;

(d) means adjacent said first cylindrical chamber for cooling said material as it is mixed and laterally conveyed;

(e) a second cylindrical chamber extending transversely to the axis of said main screw and spaced from said first chamber, said second chamber communicating with an extrusion outlet orifice positioned generally below said outlet feed passage;

(f) a second transverse screw mounted in said second chamber and having screw lands formed thereon which extend laterally outwardly from said extrusion outlet orifice, the pitch of said screw lands being such as to convey material delivered to an outer end of said second cylindrical chamber toward said outlet orifice;

(g) means adjacent said second cylindrical chamber for cooling said material as it is mixed and conveyed toward said outlet orifice, and

(h) connecting passage means intercommunicating the outer ends of said first and second cylindrical chambers,

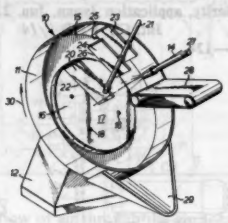
whereby said material is thoroughly mixed and conveyed from said main extruding screw, laterally outwardly through said first chamber, through said connecting passage means and said second chamber to said outlet orifice.

4,214,863

ROTARY PAN PELLETIZERS

John S. Nixon, Appley Bridge, Near Wigan, England, assignor to Pilkington Brothers Limited, St. Helens, England

Filed Apr. 25, 1979, Ser. No. 33,072
Claims priority, application United Kingdom, Apr. 27, 1978, 16812/78
Int. Cl.[2] B29B *1/03*
U.S. Cl. 425—222 5 Claims



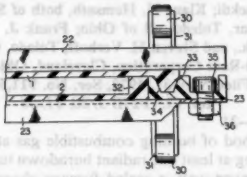
1. A rotary pan pelletizer comprising a circular pan with a circumferential rim, mounted for rotation about an inclined axis, means for feeding material to be pelletized into the pan, and means for feeding a binder liquid on to a central area of the bottom surface of the pan, wherein the bottom surface of the pan is provided with a central circular portion which is raised above the level of the annular portion around the said central portion and which extends radially substantially as far from the pan axis as the area on to which the binder liquid can be fed, and the pelletizer also comprises a stationary central plough disposed so as to operate over the whole area of the raised central portion of the bottom surface of the pan, with the lower surface of the central plough in close proximity to the raised central portion, and one or more further ploughs or scrapers disposed so as to operate over the whole area of the annular portion around the said central portion and having their lower surfaces in substantially the same plane as that of the central plough.

4,214,864

CONTINUOUS MOLDING APPARATUS WITH COVER BELT

Charles P. Tabler, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio

Filed Jun. 12, 1978, Ser. No. 914,740
Int. Cl.[2] B29D *27/00*
U.S. Cl. 425—329 12 Claims



1. Apparatus for the continuous molding of a product, comprising:

a first endless rigid molding conveyor and a second opposed endless rigid molding conveyor having adjacent runs through a molding zone;

an endless side dam traveling between each side margin respectively, of the molding conveyors along the adjacent runs in the molding zone so as to close the sides of the molding zone and form a moving pressure mold adapted to receive a material to be molded at its entrance end and confine the material within the pressure mold until it is expelled at the exit end of the mold;

an endless flexible cover belt passing between the first and second rigid conveyors along the adjacent runs so as to overline and separate the product from one of the rigid conveyors, and said cover belt, along one of its longitudinal sides, with respect to the conveying direction, having a first cam means;

a second cam means carried by the other of said endless conveyors along one of its longitudinal sides in opposition to said first cam means at least along said adjacent runs for engaging said first cam means, moving relatively toward said first cam means and thereby wedging said first cam means laterally outward from the central longitudinal axis of the mold as the endless conveyors approach each other at the entrance of the mold to thereby tightly hold the top cover belt in a fully extended position throughout the molding zone;

said cover belt, along the other of its longitudinal sides, with respect to the conveying direction, having first fixing means; and

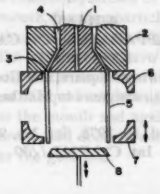
second fixing means carried by at least one of said endless conveyors along the other of its longitudinal sides in opposition to said first fixing means at least along said adjacent runs for engaging said first fixing means as the endless conveyors approach each other at the entrance of the mold to thereby fix the other longitudinal side of said cover belt during the engagement of said first and second cam means.

4,214,865

APPARATUS FOR MAKING BLOW MOLDED GENERALLY TIRE SHAPED ARTICLES

Tyler K. Olcott, Valentines, Va., assignor to W. R. Grace & Co., Duncan, S.C.

Division of Ser. No. 685,567, May 12, 1976, Pat. No. 4,075,187.
This application Dec. 22, 1977, Ser. No. 863,631
Int. Cl.[2] B29D *23/03*
U.S. Cl. 425—532 4 Claims



1. Apparatus for blow molding an article from a molten tubular parison sealed at both ends, comprising:

means for extruding a molten tubular parison downwardly;

two mold sections, one of said mold sections being vertically reciprocable toward and into engagement with the other mold section to define a cavity;

means for sealing the open end of the tubular parison, said means for sealing being vertically reciprocable into and out of said one of said mold sections and the open end of said tubular parison whereby said open end is pinched between said means for sealing and said one of said mold sections;

means for sealing the upper end of the tubular parison;

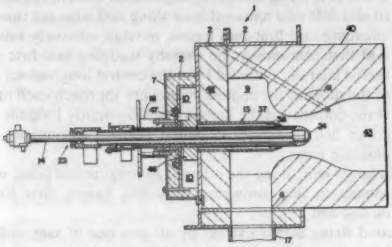
means for moving one of said mold sections vertically toward and into engagement with the other mold section to totally enclose said parison; and,

means for injecting fluid into said parison to expand the parison into the mold cavity to form the article.

4,214,866
BURNER FOR HIGH TEMPERATURE COMBUSTION AIR

Arvind C. Thekdi; Klaus H. Hemsath, both of Sylvania, Ohio, and Frank J. Vereecke, Palmyra, Mich., assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Dec. 6, 1978, Ser. No. 966,873
Int. Cl.[3] F27D *17/00*; F27B *3/22*
U.S. Cl. 432—12 20 Claims

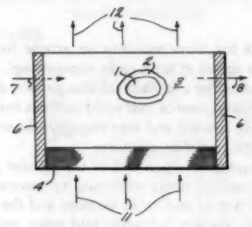


1. A burner which comprises:
a housing;
a burner block mounted on the housing having a combustion chamber;
a primary high pressure combustion air inlet to the housing;
a low pressure chamber in the housing in communication with the primary air inlet;
a secondary air inlet to the low pressure chamber;
a jet pump means through which the primary air inlet communicates to the low pressure chamber, the jet pump means being directed to cause primary air to flow into the combustion chamber;
a fuel feed means to feed fuel into the combustion chamber;
a means to ignite the combustion air and fuel brought to the combustion chamber.

4,214,867
METHOD AND APPARATUS FOR CATALYTIC HEAT EXCHANGE

James B. Hunter, Newtown Square, and George McGuire, West Chester, both of Pa., assignors to Matthey Bishop, Inc., Malvern, Pa.

Filed Jul. 18, 1978, Ser. No. 925,862
Int. Cl.[2] F24J *1/00*
U.S. Cl. 432—29 7 Claims

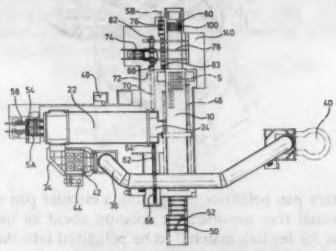


1. A process for catalytic heat exchange which comprises providing a first and second zone, separated by a ceramic coated metal heat transfer membrane having two sides at least one of which is coated with a catalyst, flowing a first gas through the first zone over the catalytic side of the ceramic coated metal heat transfer membrane to generate heat, and flowing a second gas through the second zone and over the opposite side of the membrane whereby heat is transferred from the first gas passing through the first zone to the second gas passing through the second zone.

4,214,868
METHOD OF AND AN APPARATUS FOR SOAKING STEEL PIECES

Seigo Tabuchi, Narashino, Japan, assignor to ITOH Iron & Steel Works Co. Ltd., Tokyo, Japan

Filed Nov. 27, 1978, Ser. No. 963,829
Claims priority, application Japan, Jun. 21, 1978, 53-75220
Int. Cl.[3] F27B *9/14*
U.S. Cl. 432—124 9 Claims



1. An apparatus for soaking steel pieces comprising a heated soaking furnace having an inlet, an outlet and troughs for guiding the pieces through said furnace, a chamber for preheating cold steel pieces, means for transferring at least a portion of the heat from said furnace to said chamber, said chamber having an inlet for receiving cold pieces, means for moving the cold pieces through said chamber to preheat the same and an outlet in communication with the inlet of said furnace, and means for conveying the preheated pieces from the outlet of said chamber to the inlet of said furnace, whereby said pieces are introduced in preheated condition to said furnace including feed means for cross-feeding said cold pieces to said chamber, normally of the direction of said soaking furnace, means for effecting a translatory change in direction of said cold pieces of 90° on to said means for moving said cold pieces through said chamber, and means for effecting a second translatory change in direction of said cold pieces of 90° from said means for moving said cold pieces on to said conveying means for introduction into said furnace.

4,214,869
FURNACE WITH RADIANT BURNDOWN TUBE

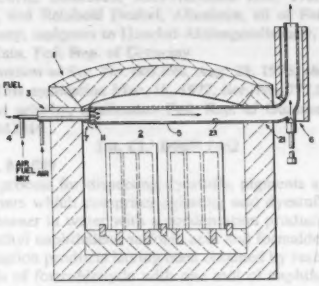
Arvind C. Thekdi; Klaus H. Hemsath, both of Sylvania; James G. Conybear, Toledo, all of Ohio; Frank J. Vereecke, Palmyra, Mich., and Steven H. Verhoff, Toledo, Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed May 31, 1978, Ser. No. 911,550
Int. Cl.[2] F27B *3/20, 11/08*
U.S. Cl. 432—31 25 Claims

17. A method of burning combustible gas atmosphere in a furnace having at least one radiant burndown tube, the furnace having a furnace wall, a sealed furnace chamber, a conduit through the furnace wall, and the radiant burndown tube having a tube portion within the furnace chamber, the tube portion having a burner end and an exhaust end, an exhaust means connected to the exhaust end, a burner leg connected to the burner end, the burner leg having an ignition means and an air nozzle, comprising the steps of:
locating the burner end so that there is an annular space inlet between the burner end and the conduit;
introducing air from the air nozzle into the burner end of the tube portion of the radiant burndown tube;
drawing the combustible gas from the furnace chamber through the inlet into the tube portion;

mixing the air and the combustible gas within the tube portion;

igniting the air and combustible gas mixture within the tube portion;



controlling the flow of air through the air nozzle to insure entrainment of the combustible gas in the air within the tube portion for uniform burning with a relatively low temperature spread along the length of the tube portion;

exhausting the contents of the tube portion to an exhaust means.

4,214,870

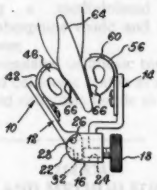
DENTAL CLAMP

Jacob Fagelman, 1022 E. 23rd St., Brooklyn, N.Y. 11210

Filed Nov. 1, 1978, Ser. No. 956,694

Int. Cl.[3] A61C *5/12*; A61F *5/04*

U.S. Cl. 433—40 **2 Claims**



1. A dental instrument for tooth restoration comprising, in combination, a clamp including a channel shaped bracket armed with a web and two flanges, a pair of spaced arms carried by said bracket, means for pivotally mounting one of said arms on said bracket, means for rigidly securing the other arm to said bracket, an upper portion and a lower portion on said one arm, said lower portion being offset from said upper portion, said one arm having an opening therethrough intermediate sais portions, said pivotal means including a pin loosely disposed in said one arm opening and having its ends secured in said bracket flanges, a finger on each of said arms, means for longitudinally adjusting positions of said fingers along said arms, a resilient element at a free end of each of said fingers, and means for adjusting the relative position of said one arm with respect to the other arm, whereby said spaced resilient elements may be adjustably disposed for tooth restoration.

4,214,871

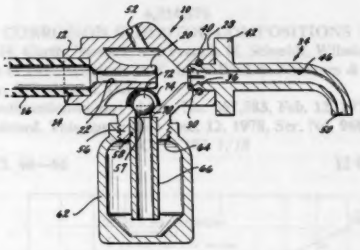
METHOD AND APPARATUS FOR CLEANING TEETH AND REMOVING PLAQUE

Carter H. Arnold, 317 Rocky Point Rd., Palos Verdes, Calif. 90274

Filed Jan. 23, 1978, Ser. No. 871,203

Int. Cl.[2] A61C *3/02*; A61K *5/00*

U.S. Cl. 433—216 **12 Claims**



1. A method of removing plaque from teeth including the steps of generating a controlled stream of liquid which can be discharged into the mouth, forming particles in pellet form and of a material which has a delayed solubility in said liquid and sufficient mass in pellet form so as to have kinetic energy when moving at the velocity of the stream of liquid, entraining the particles in the stream of liquid and jetting the stream with the entrained pellets into the mouth and against the teeth for removing plaque, whereby said delayed soluble pellets will dissolve if lodged under the gum line.

4,214,872

DISPERSING AGENTS FOR FINELY DIVIDING AND STABILIZING DYESTUFFS, PIGMENTS AND OPTICAL BRIGHTENERS AS WELL AS THE DISPERSIONS THEREBY OBTAINED

Heinz Uhrig, Steinbach; Karl-Hermann List, Frankfurt am Main, and Reinhold Deubel, Altenhain, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 608,896, Aug. 29, 1975, abandoned. This application Mar. 15, 1977, Ser. No. 777,860

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1974, 2442514

Int. Cl.[3] D06P *1/62*

U.S. Cl. 8—589 8 Claims

1. A process for dispersing dyestuffs, pigments and optical brighteners which comprises agitating said dyestuff, pigment or brightener in water with a condensation product of mono- or dimethyl naphthalene sulfonic acid and formaldehyde, said condensation products having been obtained by reacting 0.8 to 1.3 mols of formaldehyde with one mol of naphthalene containing 1 to 2 methyls and 0.5 to 2 sulfo groups per naphthalene nucleus.

4,214,873

TRIS(N-CARBALKOXYLAMINOMETHYL)PHOSPHINE OXIDES AND SULFIDES

Arlen W. Frank, Slidell, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 964,852, Nov. 29, 1978. This application Apr. 30, 1979, Ser. No. 34,878

Int. Cl.[2] D06M *13/28, 1/00*

U.S. Cl. 8—116 P 2 Claims

1. A process for imparting a flame retardant character to a cellulosic textile which comprises:

(a) impregnating the cellulosic textile with an aqueous solution containing a methylolated tris(N-carbalkoxylaminomethyl)phosphine oxide and a catalyst selected from acid and base;

(b) drying the impregnated cellulosic textile;

(c) curing the dried cellulosic textile at about 160° C.; and

(d) rinsing the cured cellulosic textile to remove watersoluble by-products.

4,214,874

COMBINATION AND METHOD FOR MIXING THE CONTENTS OF A BLOOD COLLECTION TUBE AND THEREAFTER REMOVING THE MIXING ELEMENT

Fred K. White, Miami, Fla., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Feb. 8, 1979, Ser. No. 10,234

Int. Cl.[2] G01N *33/16;* B01F *13/08*

U.S. Cl. 23—230 B 19 Claims

1. A method for mixing blood with anticoagulant in a collection tube and thereafter safely removing the mixing element therefrom, said method involving the preliminary steps of drawing blood into a collection tube containing anticoagulant, introducing a magnetic element into said tube, sealing the ends of the tube, and thereafter moving a magnet back and forth along the outside of the tube to shift the magnetic element within the tube and thereby mix the blood and anticoagulant together, wherein the improvement comprises

utilizing an elongated tubular resilient cap as the means for sealing at least one end of said tube, said cap providing an elongated cavity having a mouth portion sealingly and removably receiving an end of said tube and having a main cavity portion extending beyond said tube, moving said magnet to shift said element into said cavity of said cap after said blood and anticoagulant have been mixed in said tube, and thereafter removing and discarding said cap with the blood-coated magnetic element captured therein.

4,214,875

COATED COAL PILES

Robert V. Kromrey, Burke, Va., assignor to Atlantic Research Corporation, Alexandria, Va.

Continuation of Ser. No. 794,577, May 6, 1977, abandoned. This application Jul. 31, 1978, Ser. No. 929,618

Int. Cl.[3] C08L *91/06;* C10L *5/00*

U.S. Cl. 44—6 60 Claims

1. A process for protecting coal piles comprising: applying a coating composition to surface of the pile exposed to atmosphere, said coating composition prior to said application being in at least semi-fluid state, being capable of solidifying after application of said coating, and being a substantially uniform mixture consisting essentially of a minor proportion of an orgainic binder, which is wax, tar, asphalt, pitch, or mixtures thereof, and a major proportion of a filler consisting essentially of particulate organic solid distributed substantially uniformly throughout said binder.

4,214,876

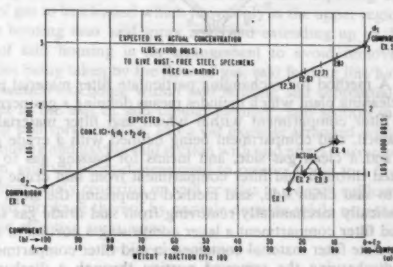
CORROSION INHIBITOR COMPOSITIONS

Bruce H. Garth, Newark, and Francis H. Schmidt, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 657,583, Feb. 12, 1976, abandoned. This application Dec. 12, 1978, Ser. No. 968,850

Int. Cl.[2] C10L *1/18*

U.S. Cl. 44—66 12 Claims



1. A corrosion inhibitor composition for hydrocarbon fuels consisting essentially of, by weight,

(a) about 75% to 95% of at least one polymerized unsaturated aliphatic monocarboxylic acid, said unsaturated acid having 16 to 18 carbons per molecule, and

(b) about 5% to 25% of at least one monoalkenylsuccinic acid in which the alkenyl group has 8 to 18 carbons.

4,214,877

FINE GRIT ABRASIVE

Raymond E. Pemrick, Schenectady, N.Y., assignor to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 785,899, Apr. 8, 1977, abandoned. This application Dec. 19, 1978, Ser. No. 971,839

Int. Cl.[2] B24D *11/02*

U.S. Cl. 51—295 2 Claims

1. A fine grit flexible coated abrasive sheet having a heat calendered cloth backing woven of polyester yarn, said backing, exclusive of coatings, having a weight of 3.5–9.5 oz./sq.yd. a stretch profile in the warp direction of ≦6% at 50 lbs. ≦9%

at 100 lbs. and < 15% at 200 lbs. tensile strength and having on the side to which the maker coat is applied, a fabric surface which is defined by a surface roughness reduction from uncalendered heatstretched cloth of from 55 to 85%, a thickness reduction of 20 to 35%, and a peel strength adhesion reduction of ≦40%.

4,214,878

FILTERING APPARATUS AND METHODS OF EXCHANGING PARTICULATE FILTER MATERIALS

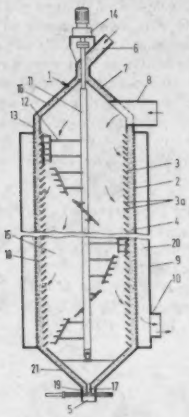
Viktor Weiss, Grillparzerstrasse 21, Graz, Austria

Filed May 25, 1978, Ser. No. 909,484

Claims priority, application Fed. Rep. of Germany, May 26, 1977, 2723885; May 11, 1978, 2820650

Int. Cl.² B01D *41/02, 46/30*

U.S. Cl. 55—96 **12 Claims**



1. A method for exchanging particulate filter material in a gas cleaning plant which includes means defining a gas-permeable filter compartment within which said filter material is contained, said compartment being defined with a crude gas side and a clean gas side, and means for passing gas to be cleaned through said filter compartment from said crude gas side to said clean side, said method comprising the steps of: periodically mechanically removing from said crude gas side of said filter compartment a layer comprising a portion of the particulate filter material contained in said filter compartment and discharging the removed portion through a discharge opening of said plant; introducing into said filter compartment from a supply compartment of said plant a supply of filter material to replace said portion removed from said crude gas side thereof; periodically emptying said filter compartment by discharging through a discharge opening of said plant the entire quantity of filter material contained within said filter compartment; passing through said filter compartment, from said clean gas side thereof in a direction counter to the direction of flow therethrough of gas to be cleaned, an air current during each said periodic emptying to prevent entry of dust through the filter compartment into the clean gas side thereof; and regenerating said filter material removed from said filter compartment and thereafter returning regenerated material to said filter compartment for recycling therethrough.

8. A gas cleaning plant including filter apparatus comprising: inner and outer generally vertical coaxial gas-permeable walls defining therebetween an annular filter compartment containing therein particulate filter material, said filter compartment being adapted to have radially passed therethrough gas to be cleaned by said gas cleaning plant; means for introducing particulate filter material into said filter compartment; said inner wall being defined by a plurality of generally vertically aligned annular lamellar elements which are arranged to extend at an angle generally upwardly and inwardly of said gas cleaning plant; means for removing particulate filter material from said filter compartment comprising a plurality of cleaning elements adapted to be moved along said lamellar elements; resilient arms having said cleaning elements supported thereon and holding said cleaning elements in operative relationship relative to said lamellar elements; and a drive shaft having said resilient arms mounted thereof for operatively moving said cleaning elements relative to said lamellar elements; said cleaning elements being arranged to project to between said lamellar elements and to extend at least partially into filter material contained within said filter compartment to effect removal therefrom of a layer of said filter material.

4,214,879

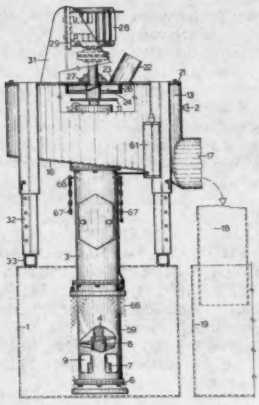
DEGASSING APPARATUS

James A. Whetstone, Cloverdale, Calif., and George W. Tillett, 50 Zahner Way, Cloverdale, Calif. 95425, assignors to George W. Tillett, Cloverdale, Calif.

Filed Dec. 26, 1978, Ser. No. 973,524

Int. Cl.² B01D *45/14*

U.S. Cl. 55—191 **11 Claims**



1. A degasser apparatus comprising:

a conduit having an inlet adapted for mounting in and formed to receive drilling mud to be recycled and an open mud discharge end;

a positive displacement rotary screw impeller mounted in said conduit adjacent said inlet and a drive shaft connected to said impeller and extending longitudinally through said conduit and from said discharge end;

motive means connected to and for driving said shaft for inducting mud into said inlet and for driving said mud longitudinally through said conduit around said shaft and for hurling said mud from said discharge end; and

a mud deflector wall mounted in surrounding relation to said shaft and in a plane substantially perpendicular thereto and in spaced relation to said end for intercepting said mud and causing said mud to fan out in a thin sheet for liberation of gas entrapped therein.

4,214,880

LIQUID SEAL SYSTEM, E.G. FOR A FLARE STACK

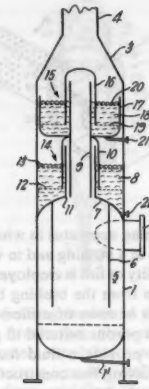
Hendrik A. Kamphorst, Groeneweg 8, 1861 PH Bergen NH, Netherlands

Filed May 2, 1978, Ser. No. 902,215

Claims priority, application United Kingdom, May 3, 1977, 18467/77

Int. Cl.[2] B01D *47/02, 45/12*

U.S. Cl. 55—204 10 Claims



1. A stack for venting and firing a combustible gas comprising a chimney portion and a columnar base portion,

the base portion being formed as a hollow supporting structure for the chimney portion, with an interior columnar chamber,

there being located in the columnar chamber a liquid sealing system comprising at least two liquid sealing devices utilizing separate respective bodies of liquid, disposed one above the other and each having a surface extending substantially across the whole width of the chamber,

means for directing incoming gas through the sealing devices into the chimney portion,

a common inlet, the inlet communicating with inner and outer co-axial ducts centrally located along the axis of the chamber, the outer duct leading to the first sealing device closest to the inlet and the inner duct leading centrally through the first sealing device to the second sealing device,

the first sealing device being above the second, the outer co-axial duct leading vertically into the liquid of the first sealing device and the inner co-axial duct leading from a level above the liquid level of the first sealing device directly into the liquid of the second sealing device.

8. A stack in accordance with claim 1 including a centrifugal separator for removing liquid entrained with the gas.

4,214,881

DEVICE FOR CLEANING HOT GASES

Peter Filss, Jülich, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

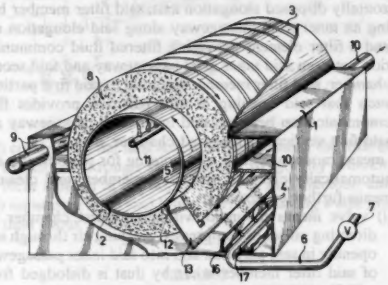
Filed Mar. 20, 1978, Ser. No. 888,002

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1977, 2712216

Int. Cl.[2] B01D *47/06*

U.S. Cl. 55—228 6 Claims

1. A device for purifying a hot gas, especially industrial waste gas, which includes in combination: a housing, a tubular member rotatably arranged in said housing, a plurality of circular plates fixedly connected and arranged in spaced relationship to each other on said tubular member for rotation with the latter, gas feeding means arranged on one side of said tubular member and extending substantially parallel to the axis of said tubular member for feeding a hot gas to be purified into the spaces respectively defined by each two adjacent plates, gas discharge means arranged on and extending along the other side of said tubular member opposite said gas feeding means and communicating with the space between said plates for withdrawing gas having passed between said plates, scraper means for cleaning said plates, said scraper means respectively extending into the spaces between each two adjacent plate means and stopping short of the outer periphery of said tubular member, a feeding line adapted to be connected to a supply of spray liquid, a plurality of spray nozzles arranged within said housing and connected to said feeding line for respectively spraying spray liquid into the space between said plates, said last mentioned space defining an effective spray zone arranged past the respective scraper when looking in the direction of



rotation of said plates, supporting means arranged within said housing and supporting said scraper means directly below the spraying zone while forming partition means impeding the flow of gas to be cleaned which flows only in the upper region of the housing near said spray zone and extending up to the wall of said housing in an arrangement to avoid removed particles being taken by the flow of gas, said feeding line having a section extending within said housing and substantially parallel to the axis of said tubular member, said section supporting said spray nozzles, and a vat likewise arranged within said housing and having said section with said nozzles arranged therein, said vat being dimensioned to receive liquid to a fluid level completely covering up said nozzles to a depth sufficient to avoid blockage thereof by particle deposits while maintaining said effective spray zone.

4,214,882

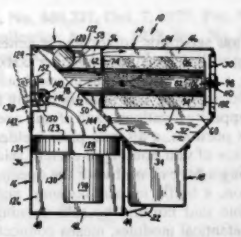
PORTABLE AIR FILTER ASSEMBLY WITH PULSE JET SELF-CLEANING FILTERS

David L. Brenholt, Dundas, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Aug. 8, 1978, Ser. No. 932,003

Int. Cl.[2] B01D *45/18*

U.S. Cl. 55—302 10 Claims



1. A portable air cleaner comprising:

(a) a housing having a dust-laden air inlet and a clean air outlet;

(b) a first partition mounted within said housing dividing the interior thereof into a first generally vertically elongated chamber and a second generally horizontally elongated chamber, said partition lying in an oblique plane at an angle with respect to the elongation axes of said first and second chambers, said partition having an opening therein providing fluid communication between said first and second chambers with said air inlet opening into second chamber and said air outlet opening into said first chamber;

(c) means within said housing for drawing air through said housing from said dust-laden air inlet to said clean air outlet;

(d) an elongated filter member mounted within said second generally horizontally elongated chamber having a horizontally disposed elongation axis, said filter member having an inner axial passageway along said elongation axis and a filter element providing filtered fluid communication between said inner axial passageway and said second chamber; said filter member mounted to said first partition such that said opening in said partition provides fluid communication between said inner axial passageway and said first vertically elongated chamber, and

(e) means mounted within said housing for periodically and automatically cleaning said filter member, said cleaning means further comprising:

(i) valve means mounted within said first chamber for directing pulses of compressed cleaning air through said opening in said partition and into said inner passageway of said filter member whereby dust is dislodged from said filter element;

(ii) means for controlling the opening and closing of said valve means; and

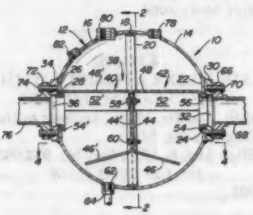
(iii) means for connecting said valve means to a source of compressed air.

4,214,883

LIQUID-GAS SEPARATOR

LeRoy J. Raseley, Saylorsburg; Samuel J. Collier, Easton, and Henry G. McCarty, Wind Gap, all of Pa., assignors to Ecolaire Incorporated, Malvern, Pa.

Filed Feb. 12, 1979, Ser. No. 11,479
Int. Cl.[2] B01D *45/08*
U.S. Cl. 55—426 **9 Claims**



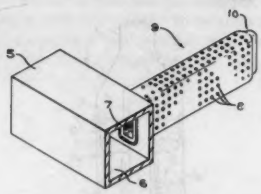
1. A liquid gas separator comprising a generally spherical housing having a liquid-gas inlet opening coaxial with a gas outlet opening, a liquid outlet drain in said housing below the elevation of said openings, said housing having flat portions at diametrically opposite locations, each of said openings being in one of said flat portions, a discrete plate welded to the outer peripheral surface of said housing at each of said flat portions, each plate having a bore coaxial with the opening on the adjacent flat portion, a baffle in said housing, said baffle being suspended within said housing by said openings, said baffle including two identical modules, means connecting said modules end-to-end and said modules having side edges mating with juxtaposed surfaces in said housing.

4,214,884

AIR FIN COOLERS FOR GLASS FIBER FORMING APPARATUS

Walter L. Martin, Jr., Lexington, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 14, 1978, Ser. No. 969,529
Int. Cl.[2] C03B *37/02*
U.S. Cl. 65—12 **2 Claims**



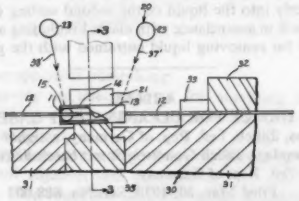
1. In a glass fiber forming apparatus in which glass fibers are attenuated from orifices in a bushing and in which a fin cooler assembly having a plurality of fins is employed to cool the glass fibers as they are drawn from the bushing by positioning the fins between the orifices or rows of orifices and wherein the fins are constructed of a porous material to permit fluid to be passed therethrough to provide a fluid for cooling the improvement comprising having fins constructed of solid nickel in tubular form, each of said fins being provided with a plurality of precisely sized apertures, each of said apertures being the same size, a solid nickel closure at one end of each of said fins to effectively seal one end of said fins thereby rendering the ends impervious to fluid flow and the said fins being open at the other end, for said open end being mounted on a manifold, means to pass gaseous fluid through said fins from said manifold, said solid nickel being between 0.0052 to 0.01 inch (0.005 to 0.025 centimeter) in thickness with the apertures ranging in size between 0.015 to 0.017 inch in diameter (0.0381 to 0.0432 centimeter).

4,214,885

METHOD FOR PRODUCING MINIATURE LAMPS

Hideo Nishi, 919 Shimosakunobe, Takatsu-Ku, Kawasaki-City, Kanagawa-Prefecture, Japan

Filed Mar. 1, 1978, Ser. No. 882,653
Int. Cl.[2] C03C *27/02*
U.S. Cl. 65—42 **1 Claim**

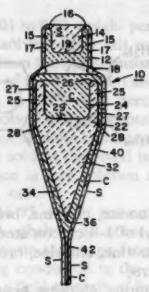


1. Method for producing miniature lamps comprising the steps of heating a glass bead of a stem by radiation such as infrared rays, the glass bead being heated up to the melted state thereof by the internal reflection of the infrared rays, melting the inner periphery of the glass tube around the glass bead, said heating being performed in the vacuum atmosphere, and at the same time shielding the other part of the glass tube that does not contact the glass bead and cooling said other part of the glass tube by the radiation between the other part of the glass tube and the block for enclosure.

4,214,886
FORMING LAMINATED SHEET GLASS

George C. Shay, Corning, N.Y., and Raphael A. Simon, Avondale Estates, Ga., assignors to Corning Glass Works, Corning, N.Y.

Filed Apr. 5, 1979, Ser. No. 27,497
Int. Cl.[2] C03B 17/00
U.S. Cl. 65—121 12 Claims



1. A method of forming laminated sheet glass which comprises, supplying a first molten glass of one composition to a first overflow channel, supplying a second molten glass of another composition to a second overflow channel, overflowing the first glass from said first channel into two separate downwardly converging sheet-like flow paths, overflowing the second glass from the second channel downwardly into two separate sheet-like flow paths and onto the outer surface of the downwardly flowing sheet-like paths of said first glass to form a pair of downwardly converging laminated flows while said glasses are in a molten condition, uniting said converging pairs of laminated flows into a single composite and drawing a sheet of laminated glass therefrom, and maintaining the outer surface of said second glass free from contact with distributing or forming means so as to provide a laminated glass sheet of fire polished quality.

9. Apparatus for forming laminated sheet glass which comprises, first overflow means for forming opposed sheetlike flows of molten glass having substantially uniform thickness across the width thereof, forming means positioned below said first overflow means for converging and uniting said opposed sheet-like flows into a single drawn sheet flow, second overflow means positioned above said first overflow means for overflowing second sheet-like flows of molten glass of substantially uniform thickness downwardly upon outer surfaces of said opposed sheet-like flows of said first overflow means, means for separately feeding molten glass to said first overflow means and said second overflow means, said first and second overflow means having longitudinally extending upper overflow surface portions, and means for longitudinally tilting said upper surface portions of said first and second overflow means with respect to the horizontal.

4,214,887
SEWAGE AND WASTE WATER TREATMENT

Arthur van Gelder, San Diego, Calif., assignor to Ozodyne, Inc., San Diego, Calif.

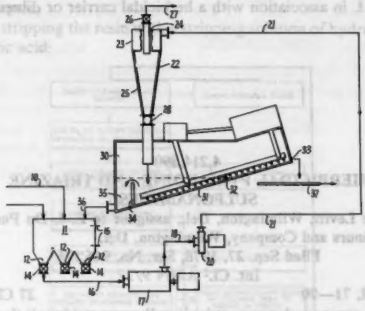
Continuation-in-part of Ser. No. 829,917, Sep. 1, 1977, abandoned. This application Nov. 8, 1978, Ser. No. 958,741
Int. Cl.[2] C05F 7/00; C02B 3/08
U.S. Cl. 71—9 8 Claims

1. A method of treating an effluent composed of raw sewage and other waste waters containing grit, suspended solids, semicolloids and solids in solution, which comprises:

(a) separating the grit, and suspended solids having a particle size greater than about 20 microns, from the effluent;

(b) introducing ozone gas at a negative pressure from an ozone generator into the resulting effluent by premixing said ozone gas and said effluent with an eductor;

(c) atomizing said ozone-treated effluent to form a mist in an enclosed chamber through which ozone is flowing whereby the droplets of mist are intimately contacted with the ozone;



(d) condensing the mist to a liquid by causing the mist droplets to fall through said chamber by gravity whereby to form a liquid in the bottom zone of said chanber; and

(e) separating from said liquid particles having a size greater than about 5 microns.

4,214,888
FOLIAR FERTILIZATION METHOD AND COMPOSITION

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Jun. 5, 1978, Ser. No. 912,527
Int. Cl.[2] C05C 9/00; C05B 15/00
U.S. Cl. 71—28 12 Claims

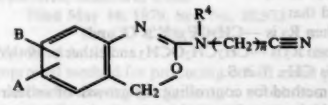
1. As a composition of matter in aqueous urea solution for foliar fertilization having low ammonia partial pressure, phytotoxicity and corrosivity, improved toxicity stability, and a pH of at least about 6 and less than about 7.6, comprising a nitrogen source consisting essentially of urea in an amount corresponding to at least about 1 weight percent nitrogen, and at least about 0.005 and not in excess of about 0.1 molar equivalents per mole of said urea of a pH buffer having a buffer point between about pH 6 and 7.6, sufficient to maintain (a) the pH of said solution between about 6 and about 7.6 and (b) a low free ammonia content corresponding to an ammonia concentration in the gas phase in equilibrium with said solution at a temperature of 20° C. and atmospheric pressure below about 40 ppm.

4,214,889
BENZOXAZINE HERBICIDES

Stewart W. Myers, Morristown, and Homer K. Spencer, Randolph, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Division of Ser. No. 840,227, Oct. 7, 1977, Pat. No. 4,164,407. This application Apr. 16, 1979, Ser. No. 30,346
Int. Cl.[2] C07D 265/18; A01N 9/22
U.S. Cl. 71—88 14 Claims

1. A compound which is a free base of the formula:



wherein

each of A and B is independently, a hydrogen atom or halo having an atomic weight of from about 34 to 80, provided that A and B are not both hydrogen atoms; and

R_4 is alkyl having from 1 to 3 carbon atoms, and

n is 1 or 2;

or an acid addition salt thereof.

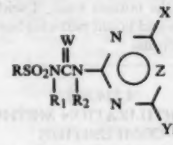
14. A herbicidal composition comprising a compound of claim 1, in association with a herbicidal carrier or diluent.

4,214,890
HERBICIDAL PYRIMIDINE AND TRIAZINE SULFONAMIDES

George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

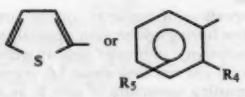
Filed Sep. 27, 1978, Ser. No. 946,176
Int. Cl.² A01N 9/12
U.S. Cl. 71—90 27 Claims

1. A compound, or an agriculturally acceptable salt thereof, which has the formula:



wherein

R is



R_1 and R_2 are independently H or CH_3;

R_3 is $-CH_2CF_3$, $-CH_2CH_2OR_6$, $-CH_2CO_2R_6$,

$-CH_2CH_2-CH_2OR_6$ or $-CH_2CH_2CO_2R_6$;

R_4 is Cl, Br, F, NO_2, CH_3, $-OCH_3$, CF_3, or

R_5 is H, Cl, Br, F, CH_3 or $-OCH_3$;

R_6 is CH_3 or CH_2CH_3;

n is 0, 1 or 2;

X is CH_3 or $-OCH_3$;

W and Y are independently O or S; and

Z is CH or N;

provided that

(a) when R_3 is $-CH_2CF_3$, Y is O; and

(b) when R_3 is $-CH_2CH_2OCH_3$ and either or both of R_1 and R_2 is CH_3, Y is S.

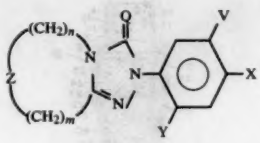
19. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

4,214,891
TRIAZOLONE HERBICIDES

Anthony D. Wolf, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 823,204, Aug. 9, 1977, Pat. No. 4,139,634.
This application Jul. 19, 1978, Ser. No. 926,120
Int. Cl.² A01N 9/22; C07D 239/00
U.S. Cl. 71—92 18 Claims

1. A compound of the formula



where

V is hydrogen, fluorine, chlorine, bromine, methyl or OR where R is alkyl of 1–4 carbon atoms;

X is hydrogen, fluorine, chlorine, bromine, cyano, methyl, methoxy, or nitro;

Y is hydrogen, fluorine, chlorine, bromine, or methyl;

n, m is 0, 1, 2, 3, or 4;

Q is oxygen or sulfur;

Z is NR';

p is 0, 1, or 2 and

R' is alkyl of 1–3 carbon atoms

with the proviso that

(1) n+m=2, 3, or 4; and

(2) if n+m=2 or 4 then Y, X≠H

4,214,892
SUBLIMABLE HERBICIDAL COMPOSITIONS CONTAINING TRIISOPROPYL-OR TRITERTIARY-BUTYL-S-TRIOXANE CARRIERS

Yasuhiko Ueno, Kawanishi; Yoshito Saeki, Suita; Takuya Akiyama, Nagaokakyo, and Masao Fujita, Amagasaki, all of Japan, assignors to Ogawa & Co., Ltd., Osaka, Japan

Division of Ser. No. 737,196, Oct. 29, 1976, Pat. No. 4,123,525, which is a continuation-in-part of Ser. No. 463,176, Apr. 22, 1974, abandoned. This application Aug. 7, 1978, Ser. No. 931,443
Claims priority, application Japan, Jun. 15, 1973, 48-68013; Jun. 15, 1973, 48-68014
Int. Cl.² A01N 9/22
U.S. Cl. 71—93 11 Claims

1. In a sublimable herbicidal composition in the form of rough grains, pulverized powders or tablets consisting essentially of an effective amount of at least one herbicide and a carrier therefor, said herbicide being intimately mixed with the carrier, the improvement wherein the carrier is triisopropyl-s-trioxane having a melting point of 62.5° C. or tritertiarybutyl-s-trioxane having a melting point of 92.0° C.

4,214,893
METHOD OF MAKING A MAGNETIC POWDER

Kunihiro Tsuganezawa; Teruo Kobayashi; Shigehisa Harada; Yoichi Nishizawa, and Tomoya Kusunose, all of Kawasaki, Japan, assignors to Nippon Columbia Kabushikikaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 547,541, Feb. 6, 1975, abandoned. This application Nov. 7, 1977, Ser. No. 849,327
Int. Cl.² H01F 1/02
U.S. Cl. 75—0.5 AA 16 Claims

1. In a method for the catalytic reduction of cobalt ions in aqueous solution, the improvement which comprises the step of heating a solution at a temperature ranging from about 20° C. below such solution's boiling point up to its boiling point for a time at least sufficient to form a precipitate of magnetizable particles, such solution comprising on a 100 weight percent total solution basis:

(A) from about 0.5 to 10 weight percent of at least one water soluble dissolved cobalt salt, selected from the group consisting of cobalt sulfate, cobalt chloride, cobalt bromide, and cobalt sulfonate,

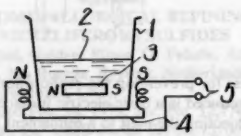
(B) from about 0.5 to 10.0 weight percent of at least one water soluble dissolved reducing agent selected from the group consisting of alkali metal hypophosphites, hydrazine hydrate, hydrazine hydrochloride, and hydrazine sulfate,

(C) from about 0.0001 to 0.02 weight percent of at least one water soluble dissolved metal salt catalyst wherein the metal is selected from the class consisting of Group VIII-B and Group I-B of the Periodic Table of the Elements,

(D) from about 0.1 to 3.0 weight percent of at least one water soluble dissolved globular protein selected from the group consisting of albumin and hemoglobin,

(E) sufficient water soluble dissolved base alkali metal hydroxide to produce in said solution a pH ranging from about 7.0 to 13.5, and

(F) from about 65 to 95 weight percent water, the weight ratio of dissolved cobalt to all other dissolved metals in such solution being in the range from about 1:10 to 1:1, said heating being conducted in the presence of a magnetic field having a field strength of from about 50 to 5000



oersteds, such solution having been prepared by the steps of

(a) preparing a first solution comprising on a 100 weight percent total first solution basis:

(1) from about 0.5 to 10 weight percent of said cobalt salt,

(2) from about 0.5 to 10.0 weight percent of said reducing agent,

(3) from about 0.1 to 3.0 weight percent of said protein,

(4) sufficient of said alkali metal hydroxide to produce in said first solution said pH, and

(5) from about 65 to 95 weight percent of said water,

(b) preparing a second solution comprising on a 100 weight percent total second solution basis:

(1') from about 0.01 to 10 weight percent of said metal salt catalyst, and

(2') from about 65 to 95 weight percent of said water, and

(c) admixing said first solution with said second solution and adding to the resulting solution sufficient of said alkali metal hydroxide to produce said pH in such resulting solution, the relative ratio of said first solution to said second solution being such as to produce in such resulting solution a composition corresponding to such solution.

4,214,894

METHOD FOR PRODUCING COBALT METAL POWDER

Joseph E. Ritsko; Richard G. W. Gingerich, and Howard L. Acla, all of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

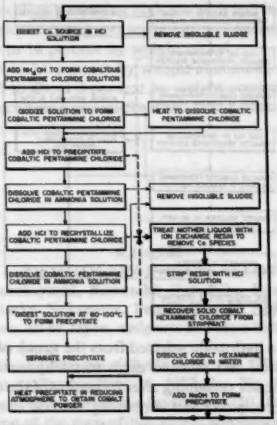
Filed May 14, 1979, Ser. No. 38,968
Int. Cl.[2] C22B *23/04*
U.S. Cl. 75—0.5 AA **14 Claims**

1. An improved method for producing cobalt metal powder, the basic method comprising: digesting a cobalt source in an HCl solution, adding ammonium hydroxide to form cobaltous pentammine chloride in solution; oxidizing the solution to form cobaltic pentammine chloride; digesting the solution to form a cobalt-containing precipitate; and heating the precipitate in a reducing atmosphere to obtain cobalt metal powder;

characterized by the improvement comprising:

(a) treating the mother liquor remaining after formation of the cobalt-containing precipitate with an ion exchange resin to remove residual cobalt species from the mother liquor;

(b) stripping the resin with a stripping solution of hydrochloric acid;


DISSOLVE Co SOURCE IN HCl SOLUTION
REMOVE INSOLUBLE SLUDGE
ADD NH4OH TO FORM COBALTOUS PENTAMMINE CHLORIDE SOLUTION
OXIDIZE SOLUTION TO FORM COBALTIC PENTAMMINE CHLORIDE
HEAT TO DISSOLVE COBALTIC PENTAMMINE CHLORIDE
ADD HCl TO PRECIPITATE COBALTIC PENTAMMINE CHLORIDE
DISSOLVE COBALTIC PENTAMMINE CHLORIDE IN AMMONIA SOLUTION
REMOVE INSOLUBLE SLUDGE
ADD HCl TO RECRYSTALLIZE COBALTIC PENTAMMINE CHLORIDE
TREAT MOTHER LIQUOR WITH ION EXCHANGE RESIN TO REMOVE Co SPECIES
DISSOLVE COBALTIC PENTAMMINE CHLORIDE IN AMMONIA SOLUTION
STRIP RESIN WITH HCl SOLUTION
"DIGEST" SOLUTION AT 80-100°C TO FORM PRECIPITATE
RECOVER SOLID COBALT HEXAMMINE CHLORIDE FROM STRIPPANT
SEPARATE PRECIPITATE
DISSOLVE COBALT HEXAMMINE CHLORIDE IN WATER
HEAT PRECIPITATE IN REDUCING ATMOSPHERE TO OBTAIN COBALT POWDER
ADD NaOH TO FORM PRECIPITATE

(c) removing solid cobalt hexammine chloride from the stripping solution;

(d) forming an aqueous solution of cobalt hexammine chloride; and

(e) adding a hydroxide selected from the group consisting of alkali metal and and alkaline earth metal hydroxides to the solution of cobalt hexammine chloride to form a cobalt-containing precipitate.

4,214,895

METHOD FOR PRODUCING COBALT METAL POWDER

Richard G. W. Gingerich; Clarence D. Vanderpool, both of Towanda; Mary A. Fedorchak, Rome; Joseph E. Ritsko, Towanda, and Michael J. Cheresnowsky, Towanda, all of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed May 14, 1979, Ser. No. 38,971
Int. Cl.[2] C22B *23/04*
U.S. Cl. 75—0.5 AA **14 Claims**

1. A method for producing fine cobalt metal powder comprising treating an aqueous solution of a soluble cobaltic ammine halide with a sufficient amount of a soluble metallic hydroxide to form a cobalt containing precipitate, separating the cobalt containing precipitate from the resulting solution, reducing said cobalt containing precipitate to form fine particles of cobalt.

4,214,896

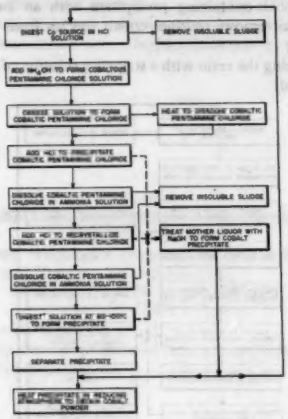
PROCESS FOR PRODUCING COBALT METAL POWDER

Michael J. Cheresnowsky, Towanda, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed May 14, 1979, Ser. No. 38,973
Int. Cl.[2] C22B *23/04*
U.S. Cl. 75—0.5 AA **10 Claims**

1. An improved method for producing cobalt metal powder, the basic method comprising: digesting a cobalt source in a HCl solution, adding ammonium hydroxide to form cobaltous pentammine chloride in solution; oxidizing the solution to form cobaltic pentammine chloride; digesting the solution to form a

cobalt-containing precipitate; and heating the precipitate in a reducing atmosphere to obtain cobalt metal powder; characterized by the improvement comprising:



(a) adding a hydroxide selected from the group consisting of alkali metal and alkaline earth metal hydroxides to the mother liquor remaining after formation of the cobalt-containing precipitate and containing residual cobalt species in solution to form a cobalt-containing precipitate.

4,214,897

PROCESS FOR THE EXTRACTION OF NON-FERROUS METALS FROM SLAGS AND OTHER METALLURGICAL BY-PRODUCTS

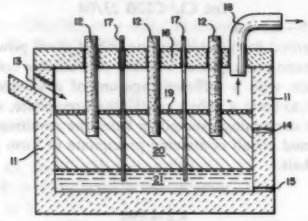
Dirk E. V. Verhulst, Edegem; Robert H. Maes, Hove, and Luc M. Fontainas, Antwerp, all of Belgium, assignors to Metallurgie Hoboken Overpelt, Hoboken, Belgium

Filed Jan. 9, 1979, Ser. No. 2,228

Claims priority, application Luxembourg, Jan. 13, 1978, 78869; Nov. 10, 1978, 80506

Int. Cl.² C21C *5/52*; C21B *3/04*

U.S. Cl. 75—11 **13 Claims**



1. A process for the extraction of non-ferrous metals from slag material comprising heating these materials by resistance to a molten state in an electric furnace with submerged electrodes, placing a layer of solid reducing agent above the molten slag material, and injecting a non-oxidizing gas into the molten slag material in a manner to produce efficient stirring of the material, the non-oxidizing gas being injected at a flow rate of between about 0.5 and about 10 Nm3/h/ton of material being treated.

4,214,898

PROCESS FOR PREVENTING THE REPHOSPHORIZATION OF ELECTRIC STEEL

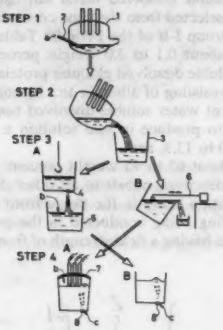
Yoshiyuki Iwanami; Masaru Fukumoto, and Mitsunori Funazaki, all of Muroran, Japan, assignors to The Japan Steel Works, Ltd., Tokyo, Japan

Filed Mar. 5, 1979, Ser. No. 17,231

Claims priority, application Japan, Mar. 24, 1978, 53-32999

Int. Cl.² C21C *5/52, 7/00*

U.S. Cl. 75—12 **3 Claims**



1. A process for preventing the rephosphorization of killed steel being produced in a basic electric furnace, which process comprises subjecting the melt to a refinement treatment in the electric furnace by means of oxygen decarburization, pouring the resulting decarburized melt and slag into a ladle, separating said slag substantially completely from said decarburized melt, and then deoxidizing the melt in the said ladle.

4,214,899

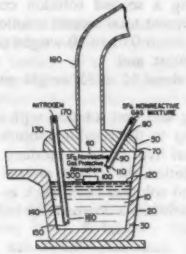
METHOD FOR THE ADDITION OF A REACTIVE METAL TO A MOLTEN METAL BATH

Ronald H. Radzilowski, Youngstown, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 9, 1979, Ser. No. 19,158

Int. Cl.² C21C *7/02*

U.S. Cl. 75—58 **14 Claims**



1. A method for the addition of a reactive metal to a molten metal bath which comprises:

(a) providing a bath of molten metal;

(b) establishing a gaseous atmosphere above the surface of said bath consisting essentially of a nonreactive gas containing from about 100 to 3000 parts per million SF_6;

(c) establishing said bath of molten metal at a temperature at which a selected reactive metal exhibits a vapor pressure exceeding the total ambient pressure of the gaseous atmosphere above the surface of said bath;

(d) depositing said selected reactive metal on the surface of said bath for dissolution therein.

4,214,900

PRODUCTION OF NONFERROUS METALS WITH LOW SELENIUM CONTENTS

Ranko Crnojevich, Gretna; Edward I. Wiewiorowski, New Orleans, and Peter H. Yu, Harvey, all of La., assignors to Amax Inc., Greenwich, Conn.

Filed Aug. 8, 1979, Ser. No. 64,689
Int. Cl.[2] C22B *23/04*
U.S. Cl. 75—109 10 Claims

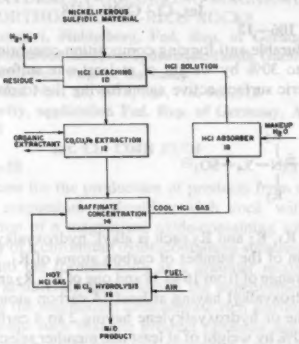
1. A process for precipitating selenium from solutions of nonferrous metals wich comprises contacting a solution of at least one nonferrous metal selected from the group consisting of cobalt, copper and nickel with a semimetallic chromous precipitant of the nonferrous metal which has a nonferrous metal to chromium ratio between about 10:1 and about 200:1 and which has a metallic content between about 50% and about 90% to precipitate selenium from the solution as a selenide of the nonferrous metal.

4,214,901

HYDROMETALLURGICAL REFINING OF NICKELIFEROUS SULFIDES

Eugene J. Michal, Golden; Simon O. Fekete, Arvada, both of Colo., and H. Jan Roorda, Ryswyk, Netherlands, assignors to Amax Inc., Greenwich, Conn.

Filed Feb. 16, 1979, Ser. No. 12,774
Int. Cl.[2] C22B *23/02, 23/04, 15/00*
U.S. Cl. 75—119 36 Claims



1. A process for recovering nickel from a nickeliferous sulfidic material containing at least one other metal selected from the group consisting of cobalt, copper and iron which comprises leaching the sulfidic material with an at least about 3 N hydrochloric acid solution to provide a pregnant nickel chloride solution; contacting the pregnant nickel chloride solution with an organic extractant to extract the other metal and to provide a nickel chloride raffinate; concentrating the nickel chloride raffinate; feeding the concentrated nickel chloride raffinate to a high temperature hydrolysis unit wherein the concentrated nickel chloride raffinate is oxidized to a nickel oxide product and a hot gaseous effluent containing hydrogen chloride; recycling the hot gaseous effluent from the high temperature hydrolysis unit through the nickel chloride raffinate to concentrate the raffinate and to produce a cooled gaseous effluent containing hydrogen chloride; and passing the cooled gaseous effluent through a water absorber to generate hydrochloric acid for leaching fresh nickeliferous sulfidic material.

4,214,902

HIGH TOUGHNESS-HIGH STRENGTH IRON ALLOY

Joseph R. Stephens, Berea, and Walter R. Witzke, Seven Hills, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 803,822, Jun. 6, 1977, abandoned. This application Jan. 25, 1979, Ser. No. 7,083
Int. Cl.[2] C22C *39/02*
U.S. Cl. 75—124 9 Claims

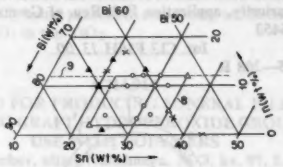
1. An iron alloy possessing high strength and high toughness characteristics at cryogenic temperatures consisting of
about 10 to 16 percent by weight nickel,
about 0.1 to 1.0 percent by weight aluminum,
about 0.5 to about 3 percent by weight copper
the balance being essentially iron.

4,214,903

BISMUTH-TIN-INDIUM ALLOY

Hideki Murabayashi, Kawasaki; Katsuhiko Kawakita, Yokosuka; Kisaku Nakamura, Funabashi, and Sadao Kobatake, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation of Ser. No. 668,448, Mar. 19, 1976, abandoned. This application Nov. 14, 1977, Ser. No. 851,267
Claims priority, application Japan, Mar. 20, 1975, 50-32937
The portion of the term of this patent subsequent to Apr. 11, 1995, has been disclaimed.
Int. Cl.[2] C22C *12/00*
U.S. Cl. 75—134 D 2 Claims



1. A substantially lead free low melting point, sealing alloy of bismuth, tin and indium which consists essentially of 53 to 76 weight percent bismuth, 22 to 35 weight percent tin and 2 to 12 weight percent indium, said alloy being substantially resistant to atmospheric oxidation at temperatures up to 150° C.

4,214,904

GOLD-TIN-SILICON ALLOY FOR BRAZING SILICON TO METAL

Donald R. Kitchen, Griffiss AFB, N.Y., and Loren A. Jacobson, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 12, 1978, Ser. No. 968,873
Int. Cl.[2] H05K *1/04;* C22C *5/00*
U.S. Cl. 75—165 4 Claims

1. A braze alloy for brazing silicon to a metal substrate, said alloy consisting essentially of about 19 to 21 weight percent tin and about 0.6 to 0.8 weight precent silicon, the balance being gold.

4,214,905

METHOD OF MAKING BEARING MATERIAL

Harold E. Sliney, Parma, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 616,528, Sep. 25, 1975, abandoned, which is a division of Ser. No. 513,611, Oct. 10, 1974, Pat. No. 3,953,343.
This application Jan. 31, 1977, Ser. No. 764,245
Int. Cl.[2] B22F 3/26
U.S. Cl. 75—200 7 Claims

1. A method for fabricating a self-lubricating, oxidation-resistant composition of matter comprising the steps of

pressing metal powders into a body and sintering the same to form a porous, metal body,

initially infiltrating said porous metal body with glass to partially fill the pores thereof whereby the walls of the pores are coated by wetting action of the glass, and

subsequently infiltrating the resulting partially filled porous, metal body with a fluoride salt.

4,214,906

METHOD OF PRODUCING AN ARTICLE WHICH COMPRISES A FIRST ZONE OF A NONOXIDE CERAMIC MATERIAL AND A SECOND ZONE OF A SOFTER MATERIAL

Manfred Langer, Fallersleben, and Johann Siebels, Wolfsburg, both of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Nov. 26, 1975, Ser. No. 635,399
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1974, 2456453
Int. Cl.[2] F16H 13/00
U.S. Cl. 75—208 R 16 Claims

1. A method of producing an article, such as a turbine blade including a first zone of nonoxide ceramic material and a second zone of a different material, which is softer than the nonoxide ceramic material, comprising the steps of introducing powders of a first material, which is at least capable of forming nonoxide ceramic material, and powders of a second material, which is different from and softer than the first material, into respective portions of a mold corresponding, respectively, to the first and second zones of the article; mingling powders of the first material with powders of the second material to form a transition region between the introduced powders of the first and second materials; and molding, by at least the common application of pressure, the introduced powders of the first and second materials, including the mingled powders, into a solid article having a first zone of a nonoxide ceramic material formed from the first material, a second zone of a different, softer material formed from the second material and a transition layer formed between the first and second zones from the mingled powders in the transition region for bonding the first zone to the second zone.

4,214,907

PHOTOSENSITIVE MATERIAL FOR ELECTROPHOTOGRAPHY HAVING A POLYVINYL CARBAZOLE DERIVATIVE, PHTHALOCYANINE, AND AN ELECTRON-ACCEPTOR

Toru Nakazawa, Osaka; Keiichi Nagahashi, Kaizuka, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company, Ltd., Osaka, Japan

Filed Jan. 5, 1978, Ser. No. 867,302
Int. Cl.[2] G03G 5/14, 5/06
U.S. Cl. 430—82 4 Claims

1. A laminated photosensitive material for electrophotography which comprises an electrically conductive substrate, an intermediate layer formed on said substrate and a top layer laminated on said intermediate layer wherein said intermediate layer comprises (A) polyvinyl carbazole or a nuclear substitution derivative thereof and (B) an electron-acceptable polycyclic aromatic nitro compound selected from the group consisting of trinitrofluorenone and tetranitrofluorenone at an (A)/(B) weight ratio of from 1/1.7 to 1/2.2 and has a thickness of 0.1 to 10 microns and said top layer comprises, incorporated in a binder, (C) phthalocyanine or a phthaloycanine derivative and (B) said electron-acceptable polycyclic aromatic compound at (C)/(B) weight ratio of from 10/8 to 10/20 and has a thickness of 0.1 to 30 microns.

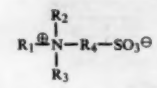
4,214,908

DURABLE ANTI-FOGGING COMPOSITION

Katsuhiko Deguchi, Sakura; Junryo Mino, Kamagaya, and Kaoru Tsujii, Sakura, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1977, Ser. No. 845,973
Claims priority, application Japan, Nov. 8, 1976, 51-134514
Int. Cl.[2] C09K 3/18
U.S. Cl. 106—13 6 Claims

1. A durable anti-fogging composition consisting essentially of 0.05 to 30% by weight of at least one sulfonic acid type amphoteric surface active agent having the formula (I):



(I)

wherein R_1, R_2 and R_3 each is alkyl, hydroxyalkyl or benzyl, the sum of the number of carbon atoms of R_1, R_2 and R_3 is in the range of from 16 to 38 and one of R_1, R_2 and R_3 is alkyl or hydroxyalkyl having at least 14 carbon atoms, and R_4 is alkylene or hydroxyalkylene having 2 to 4 carbon atoms;

0.01 to 20% by weight of at least one member selected from the group consisting of inorganic salts and acetates having the formulae MeSCN, $MeNO_3$, MeX and $MeOOCCH_3$ in which Me is a cation selected from the group consisting of Na, K, Li, NH_4, $\frac{1}{2}$Ca and $\frac{1}{2}$Mg and X is halogen; up to 30% by weight of alkanol having 2 or 3 carbon atoms; and the balance is water.

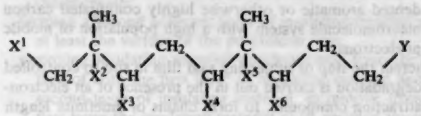
4,214,909

AQUATIC ANTIFOULING METHOD

Shizuo Mawatari, Tokyo, and Takashi Nishida, Kurashiki, both of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

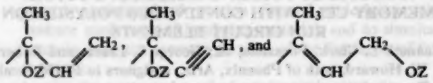
Filed Dec. 15, 1977, Ser. No. 860,723
Claims priority, application Japan, Dec. 17, 1976, 51-152369
Int. Cl.[2] C09D 5/14
U.S. Cl. 106—16 39 Claims

1. A method for rendering structures exposed to an aqueous environment resistant to fouling by barnacles, algae, bryozoa, slime, hydrozoa, mussels, oysters, and ascidiacea organisms in said environment, comprising contacting said structures with an effective antifouling amount of a sesquiterpene compound of the general formula (I):



(I)

wherein X^1, X^2 and X^3 each is a hydrogen atom, or one of X^1 and X^3 is a hydrogen atom with the other and X^2 representing a double bond in the carbon chain of the compound; X^4, X^5 and X^6 each is a hydrogen atom, or one of X^4 and X^6 is a hydrogen atom with the other and X^5 representing a double bond in the carbon chain of the compound; and Y is a group selected from the group consisting of:



wherein Z is a hydrogen atom or

where R is a hydrogen atom or a hydrocarbon group which may optionally be substituted; or mixtures thereof.

4,214,910

PROCESS FOR THE PRODUCTION OF PRODUCTS FROM NATURALLY-OCCURRING MAGNESIUM ORTHOSILICATE-RICH ROCKS

Wolfgang Baumgart, Heidelberg, Fed. Rep. of Germany, assignor to Dynamidon-Koppers Industriekeramik GmbH, Düsseldorf-Heerdt, Fed. Rep. of Germany

Filed Nov. 16, 1978, Ser. No. 961,312

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1978, 2836050

Int. Cl.² C04B *35/04*

U.S. Cl. 106—58 **15 Claims**

1. In a process for the production of products from naturally-occurring magnesium orthosilicate-rich rock with fine-grained addition of a magnesium oxide-containing substance and optionally of a chromium oxide-containing substance, then introduced into the formed body as a granular mixture and then calcined at sintering temperatures, the improvement comprising adding the magnesium orthosilicate-rich starting material in an amount such that the product obtained has a mole ratio of magnesium oxide to silicon dioxide of 1.64:1 to 1.85:1, and sintering the product sufficiently to achieve a gross density of more than 2.80 g./cc.

4,214,911

METHOD OF PRODUCTION OF CELLULAR CONCRETE

Janina Siejko, and Hanna Jatymowicz, both of Warsaw, Poland, assignors to Centralny Osrodek Badawczo-Rozwojowy Przemyslu Betonow "Cebet", Warsaw, Poland

Filed Jun. 28, 1978, Ser. No. 920,118

Claims priority, application Poland, Jul. 5, 1977, 199385

Int. Cl.² C04B *21/02, 31/06*

U.S. Cl. 106—87 **3 Claims**

1. A method for producing cellular concrete comprising the steps of mixing a filler, consisting essentially of a sandy fraction obtained as a waste material from the combustion of brown coal and having an SiO_2 content of 80–90%, with a binder consisting essentially of lime and cement, dry grinding the mixture of filler and binder, adding water at a temperature of about 50° C. and a pore-producing agent to said mixture and allowing the resulting mixture to set.

4,214,912

DEACETYLATED BORATE-BIOSYNTHETIC GUM COMPOSITIONS

Joseph S. Raccisto, San Diego, and Ian W. Cottrell, Solana Beach, both of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 891,575, Mar. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 871,279, Jan. 23, 1978, abandoned. This application Jun. 4, 1979, Ser. No. 45,493

Int. Cl.² C08L *5/00*

U.S. Cl. 106—208 **19 Claims**

1. A deacetylated borate-biosynthetic gum having enhanced dispersibility in water and which contains from about 0.5% to about 20% by weight of a borate compound.

4,214,913

PROCESS FOR PRODUCING RUTILE TiO_2

Hans H. Glaeser, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 5, 1979, Ser. No. 17,342

Int. Cl.² C01G *23/04*

U.S. Cl. 106—300 **11 Claims**

1. In a process for manufacturing rutile titanium dioxide by reacting $TiCl_4$ and oxygen or a gas containing oxygen in a reaction chamber in the presence of $AlCl_3$ and PCl_3 wherein the $AlCl_3$ and PCl_3 are added to the reactor together, the amount of $AlCl_3$ is sufficient to form 2–4% Al_2O_3 in the TiO_2 and the amount of PCl_3 is sufficient to form 0.5–3% P_2O_5 in the TiO_2, the improvement wherein rutile TiO_2 is produced comprising adding sufficient PCl_3 to form 0.1–0.5% P_2O_5 in the TiO_2 separately at a later point in the reactor than where $AlCl_3$ is added where the $TiCl_4$ is at least 80% converted to TiO_2, said $AlCl_3$ being present in an amount sufficient to form 0.1–1.5% Al_2O_3 in the TiO_2.

4,214,914

METHOD FOR PRODUCING MINERAL FILLERS CONTAINING GRAFT HYDROPEROXIDE GROUPS FOR USE WITH POLYMERS

Sergei S. Ivanchev, ulitsa Nalichnaya, 36/3, kv. 97, Leningrad; Nikolai S. Enikolopov, Kutuzovsky prospekt, 26, kv. 245, Moscow; Boris V. Polozov, prospekt Smirnova, 20/3, kv. 32, Leningrad; Anatoly A. Syrov, ulitsa III Internatsionala, 52, kv. 51, Leningrad; Oleg N. Primachenko, Suzdalsky prospekt, 38/1, kv. 13, Leningrad, and Zorislav N. Polyakov, ulitsa Petra Smorodina, 18, kv. 8, Leningrad, all of U.S.S.R.

Filed Nov. 20, 1978, Ser. No. 962,191

Claims priority, application U.S.S.R., Dec. 6, 1977, 2546852

Int. Cl.² C09C *1/28*

U.S. Cl. 106—308 Q **1 Claim**

1. A method for producing mineral fillers for polymers, said fillers containing graft hydroperoxide groups, whereby mineral fillers are dried to a constant weight and treated at a temperature of 50° to 150° C. and a pressure of 1 mm Hg to 4 atm with organosilicon compounds selected from the group consisting of compounds of the general formula:

$$R_{4-y}SiX_y,$$

where

R is selected from the group consisting of vinyl, allyl and norbornyl;

X is selected from the group consisting of chlorine, alkoxy and acyloxy;

$y=1-3$;

or from the group consisting of compounds of the general formula:

$$R'R_{3-z}SiX_z,$$

where

R is selected from the group consisting of vinyl, allyl and norbornyl;

X is selected from the group consisting of chlorine, alkoxy and acyloxy;

$z=1-2$;

R' is selected from the group consisting of methyl, ethyl and propyl,

whereupon the mineral filler containing graft unsaturated groups is separated from the reaction mixture, dried and ozonized with ozone-oxygen mixture containing 4 to 6 percent by volume of ozone at a temperature of $-20°$ C. to $+20°$ C. in a reactant medium selected from the group consisting of aliphatic saturated monohydric alcohols and aliphatic saturated monohydric acids and the mineral filler containing graft hydroperoxide groups is recovered.

4,214,915

METHOD AND COMPOSITION FOR CLEANING OVENS

Alan Dillarstone, Bramhall; Norman C. Lowe, Flixton, and Edwin Cropper, Shaw, all of England, assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 745,753, Nov. 29, 1976, abandoned. This application Aug. 7, 1978, Ser. No. 931,783

Int. Cl.[2] B08B *3/08, 3/10*

U.S. Cl. 134—19 **11 Claims**

1. A method of cleaning a surface which is subjected to heat and is soiled, or liable to soiling, by baked-on organic food deposits, which comprises applying to the surface, before and/or after the deposition of the deposits thereon, an aqueous solution of a mixture of 1 to 2% by weight sodium bicarbonate and 14 to 17% by weight potassium bicarbonate in a weight ratio of 1:7 to 1:17 respectively.

4,214,916

THIN FILM PHOTOVOLTAIC CONVERTER AND METHOD OF PREPARING SAME

Hal C. Felsher, 360 Dawson La., Jericho, N.Y. 11753; Fred H. Pollak, 531 Main St., Roosevelt Island, N.Y. 10044, and Arthur Bradley, 146 Beech St., Floral Park, N.Y. 11001

Filed Feb. 5, 1979, Ser. No. 9,645

Int. Cl.[2] H01L *31/06*

U.S. Cl. 136—89 SJ **13 Claims**

1. A photovoltaic device comprising in combination:

an electrode comprising a substrate essentially transparent to light;

a thin film in intimate contact with said electrode substrate consisting essentially of a lattice of stacked carbon chains having alternating single and double bonds containing between zero and one hydrogen atom per carbon, degraded from a highly oriented organic polymer, the interface between said film and said electrode substrate constructed to act as a source of photo-induced voltage;

wherein said lattice of stacked carbon atoms consists essentially of a conjugated carbon or carbon-hydrogen structure, plus an electron-attracting additive which causes an internal separation of the charges on said stacked carbon atoms by attracting electrons from the pi-bonds of said conjugated carbon structure; and

wherein said electron-attracting additive consists essentially of phthalocyanine or one of its metal salts.

5. The method of fabricating a photovoltaic device which comprises the steps of:

depositing a film of highly oriented organic polymer on a transparent electrically-conducting substrate;

subjecting said film in situ to controlled degradation by chemical, thermal or radiation treatment to form a condensed aromatic or otherwise highly conjugated carbon macromolecule system with a high population of mobile pi-electrons;

wherein the step of subjecting said film in situ to controlled degradation is carried out in the presence of an electron-attracting compound, to form chains of indefinite length by charge transfer complexes with the condensed aromatic or highly conjugated carbon macromolecule system; and

wherein said electron-attracting compound is a metallic salt of phthalocyanine formed in situ by thermal reaction of an inorganic salt and a nitrogen-containing derivative.

4,214,917

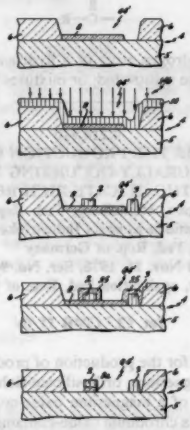
PROCESS OF FORMING A SEMICONDUCTOR MEMORY CELL WITH CONTINUOUS POLYSILICON RUN CIRCUIT ELEMENTS

Kenneth L. Clark, Pocatello, Id.; George S. Leach, and Robert W. Howard, both of Phoenix, Ariz., assignors to EMM Semi, Tempe, Ariz.

Filed Feb. 10, 1978, Ser. No. 876,726

Int. Cl.[2] H01L *21/26, 21/283, 29/78*

U.S. Cl. 148—1.5 **9 Claims**



1. The process of forming a plurality of polysilicon runs on the surface of a semiconductor substrate, at least one of the polysilicon runs having a resistor formed therein, in a predetermined portion thereof, and at least one of the polysilicon runs forming the conductive gate electrode of a self-aligned insulated silicon gate field effect device, said process comprising the steps of:

establishing a first adherent layer of a single type of insulating material of predetermined thickness on the surface of the semiconductor substrate, said first layer of insulating material having reduced thickness regions above predetermined first areas of the substrate;

depositing a layer of polysilicon directly on said first adherent layer of a single type of insulating material to overlie both the predetermined thickness regions of the first insulating layer and the reduced thickness regions of the first insulating layer;

implanting dopant ions in the layer of polysilicon to establish a first conductivity of the polysilicon corresponding in conductivity to resistor material;

removing portions of the polysilicon layer to define a plurality of polysilicon runs, at least one of the polysilicon runs traversing across a central portion of a reduced thickness region of the first insulating layer to overlie and protect

the reduced thickness insulating material immediately therebeneath;

forming a second adherent layer of insulating material over at least the surface of the polysilicon runs;

removing insulating material simultaneously from the surface of both the first layer of insulating material and the second layer of insulating material, to remove from the first layer the insulating material of its reduced thickness regions to expose the substrate of said first areas where such insulating material is not protected by an immediately overlying polysilicon layer, and to remove the second layer of insulating material to define a remaining resistor mask area of insulating material which overlies and protects the predetermined portion of a polysilicon run in which a resistor is to be formed; and

applying dopant to render the unprotected portions of the polysilicon runs highly conductive relative to the protected predetermined portion thereof underlying said resistor mask area of insulating material, and to simultaneously dope the exposed portions of the first areas of the substrate;

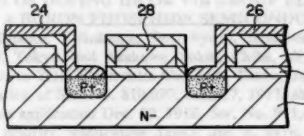
whereby the protected masked predetermined portion of a polysilicon run defines a resistor of first conductivity resistive material formed in a relatively highly conductive polysilicon run, and the polysilicon run which traverses across and protects underlying reduced thickness insulating material in a central portion of a first area of the substrate defines the conductive gate electrode of a self-aligned insulated silicon gate field effect device.

4,214,918

METHOD OF FORMING POLYCRYSTALLINE SEMICONDUCTOR INTERCONNECTIONS, RESISTORS AND CONTACTS BY APPLYING RADIATION BEAM

Arnon Gat; Levy Gerzberg, both of Stanford, and James F. Gibbons, Palo Alto, all of Calif., assignors to Stanford University, Stanford, Calif.

Filed Oct. 12, 1978, Ser. No. 950,828
Int. Cl.² H01L *21/263*
U.S. Cl. 148—1.5 **16 Claims**



1. The method of forming a low resistance circuit interconnection on a dielectric layer on a substrate comprising the steps of forming a polycrystalline semiconductor layer on said dielectric layer, doping said polycrystalline layer with a conductivity determining impurity, and applying a radiation beam to said doped polycrystalline layer thereby increasing the grain size and conductance of said doped polycrystalline layer.

4,214,919

TECHNIQUE OF GROWING THIN SILICON OXIDE FILMS UTILIZING ARGON IN THE CONTACT GAS

William C. Young, Ramona, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 28, 1978, Ser. No. 973,928
Int. Cl.² H01L *21/31, 21/469*
U.S. Cl. 148—1.5 **9 Claims**

1. In an improved process for forming thin oxide film, on the order of several hundred A° thick or less, on hot integrated circuit substrates, the substrates including silicon and/or compounds thereof, and wherein the hot substrates are contacted by a prescribed "contact gas" during treatments just before and/or just after the sequence during which the oxide film is grown, the improvement comprising:

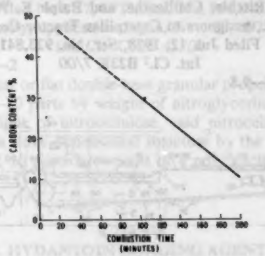
reducing nitrogenous materials in the "contact gas", and replacing at least a portion of said materials with Argon gas so as to discourage and abate the formation of "micro-defects" which lead to "shorts" or to reduced breakdown-voltage across the oxide film.

4,214,920

METHOD FOR PRODUCING SOLAR CELL-GRADE SILICON FROM RICE HULLS

James A. Amick, Princeton, N.J.; John V. Milewski, Los Alamos, N. Mex., and Franklin J. Wright, Watchung, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 23, 1979, Ser. No. 23,300
Int. Cl.² H01L *21/04;* C04B *31/00*
U.S. Cl. 148—1.5 **31 Claims**



1. A process for producing solar grade high purity silicon from common rice hulls comprising:

leaching the rice hulls in acid and in water,

coking the leached rice hulls to produce a composite of carbon and silica,

adjusting the carbon to silica ratio of the coked rice hulls to less than about 2:1,

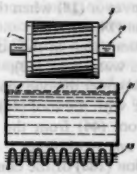
thermally reducing the adjusted carbon and silica mixture to produce elemental silicon.

4,214,921

METHOD OF MANUFACTURING A CORROSION RESISTANT ROTOR ASSEMBLY

David L. Henderson, O'Fallon, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Continuation-in-part of Ser. No. 920,663, Jun. 30, 1978, which is a division of Ser. No. 663,146, Mar. 2, 1976, Pat. No. 4,113,518.
This application Mar. 30, 1979, Ser. No. 25,356
Int. Cl.² H02K *15/02*
U.S. Cl. 148—6.35 **9 Claims**



1. A method of fabricating a corrosion resistant rotor assembly, the latter having a core made from a stack of plate-like laminations of suitable ferro-magnetic material, said core having a central bore therethrough for the shrink fit reception of a rotor shaft, said method comprising the steps of:

heating said core to a predetermined elevated temperature

which is sufficient to cause at least some oxidation of said laminations;

inserting said shaft in said bore;

quenching said heated core and said shaft in an oil bath maintained at approximately ambient or room temperature; and

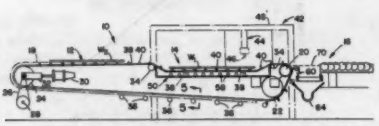
removing said rotor assembly from said oil bath so as to form a dry film on said rotor assembly capable of inhibiting the formation of corrosion on at least certain surfaces of said rotor assembly for long periods of time, particularly when said rotor assembly is installed in a dynamoelectric machine operated in a high moisture environment.

4,214,922

CONVEYOR INSTALLATION AND METHOD FOR HANDLING WORKPIECES

Timothy J. Ritchie, Chillicothe, and Ralph E. White, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 12, 1978, Ser. No. 923,841
Int. Cl.[2] B23K 7/00
U.S. Cl. 148—9.5 **27 Claims**



1. An installation (10) for handling a workpiece (W_1), comprising:

(a) a first station means (12) for loading a workpiece (W_1);

(b) a second station means (14) for working on the workpiece (W_1) including means (42–48) for cutting the workpiece (W_1);

(c) a third station means (16) for unloading the workpiece; and

(d) means (18–24, 34, 36) for transporting the workpiece (W_1) from said first station means (12) to said second station means (14), including a first conveyor (18) movable in a closed loop about said first station means (12) and said second station means (14), said third station means (16) being adjacent said second station means (14) so that said first conveyor (18) delivers the workpiece (W_1) from said second station means (14) to said third station means (16).

19. A method of handling workpieces, comprising:

(a) loading one of the workpieces (W_1) on a conveyor (18) at a first station (12);

(b) moving the conveyor (18) to transport the one workpiece to a second station (14);

(c) stopping the conveyor (18) when the one workpiece is at the second station (14);

(d) lowering a portion (18*a*) of the conveyor at the second station (14) into a water tank (50);

(e) moving a tool (44) over the one workpiece and operating on the workpiece with the tool (44);

(f) removing the tool (44) from the one workpiece after operating on the one workpiece;

(g) raising the portion (18*a*) of the conveyor (18) out of the water tank after operating on the workpiece;

(h) loading another workpiece (W_2) on the conveyor (18) at the first station (12) when the one workpiece is at the second station (14); and

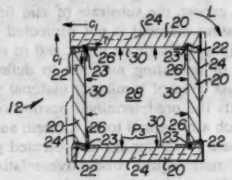
(i) moving the conveyor (18) to transport the one workpiece operated on to a third station (16) while transporting the other workpiece to the second station (14).

4,214,923

METHOD FOR TREATING METAL

Robert J. Price, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 4, 1978, Ser. No. 948,371
Int. Cl.[2] C23C 38/00
U.S. Cl. 148—12 R **9 Claims**



1. A method for controllably treating metal of a preselected area (23) of an element (12) having a chamber (28), sidewalls (20) and welds (22) each having a root area (23) and each joining respective sidewalls (20) on to the other, said preselected area (23) being defined by said root areas (23) of said welds (22), comprising:

heating said element (12) and pressurizing said chamber (28) to preselecting values;

controllably stressing the metal of said preselected area (23) of the element (12) beyond the elastic limit of said metal maintaining said chamber (28) at a preselected pressure (P_1) for a preselected period;

controllably stress relieving said element (12) by maintaining said element (12) at a preselected temperature while said metal of the preselected area (B) is stressed beyond the elastic limit of said metal; and

controllably creating residual stresses in said preselected area (23) of the element (12) by controllably cooling said element (12) and depressurizing said chamber (28).

4,214,924

METHOD OF IMPROVING SURFACE CHARACTERISTIC OF HEAT-TREATED METAL

Joseph A. Piucci, Royersford, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Oct. 27, 1978, Ser. No. 955,252
Int. Cl.[2] C21D 1/56; C10M 1/22
U.S. Cl. 148—18 **8 Claims**

1. A method for reducing the residue of non-volatile carbonaceous thermal decomposition products of a metal-treating composition resulting from the high-temperature processing of a steel substrate treated with said composition, comprising

(a) modifying said metal-treating composition by incorporating therein an aliphatic monoacetylenic alcohol containing one or two hydroxy groups in the amount of from about 0.1% to about 10% by weight of said metal-treating composition;

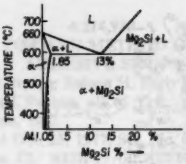
(b) treating the metal substrate with said modified composition; and

(c) processing the treated metal at tempertures above about 1200° F. whereby the ensuing residue of thermal decomposition product is substantially less than would be the residue of the unmodified metal-treating composition.

4,214,925
METHOD FOR FABRICATING BRAZED ALUMINUM FIN HEAT EXCHANGERS

Koji Arita, Kobe; Masahiro Chiji, Akashi; Takayoshi Asami, Otsu; Yasuhumi Karaki, Hyogo, and Toshihiko Endo, Akashi, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Oct. 17, 1978, Ser. No. 952,160
Claims priority, application Japan, Oct. 25, 1977, 52-128878
Int. Cl.[2] B23P *15/26*; B27C *1/00*
U.S. Cl. 148—127 11 Claims



1. A method for fabricating a brazed aluminum fin heat exchanger which essentially comprises a pair of brazing sheets each consisting of a core sheet and a cladding of brazing material disposed on either side of said core sheet and a corrugated fin member interposed between brazing sheets constituting said pair and brazed thereto comprising:

making at least said fin member of a heat-treatable aluminum alloy in an Al-Mg-Si system containing 0.15–0.4% copper,

assembling the fin with said brazing sheets into a brazed aluminum fin heat exchanger unit,

maintaining said heat exchanger unit at a temperature between 500° C. and 570° C. for a time from 30 minutes to 4 hours,

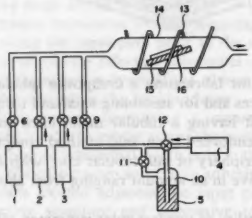
quenching the solution-treated unit to room temperature under conditions which provide a cooling rate of 2.8° C./min to 50° C./min down to 200° C. and,

thereafter, age-hardening the quenched unit.

4,214,926
METHOD OF DOPING IIB OR VIB GROUP ELEMENTS INTO A BORON PHOSPHIDE SEMICONDUCTOR

Nagano Katsuto, Yokohama; Sasa Syozo, Ichikawa; Nakada Takeshi, Tokyo, and Asakawa Yukio, Chiba, all of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 810,097, Jun. 27, 1977, abandoned. This application Dec. 20, 1978, Ser. No. 971,440
Claims priority, application Japan, Jul. 2, 1976, 51/78726; Jul. 2, 1976, 51/78727
Int. Cl.[2] H01L *21/205, 29/207*
U.S. Cl. 148—175 7 Claims



1. A method of doping IIb group elements into a boron phosphide semiconductor on a single crystal silicon substrate comprising heating the substrate at a temperature between about 850° C. and 1100° C.; passing a gas containing boron compounds selected from the group consisting of boron hydrides and boron halides, and phosphorus compounds selected from the group consisting of phosphorus hydrides and phosphorus halides into contact with said substrate; adding organic compounds of IIb group elements to said gas, the mol ratio of said IIb group organic compounds to said boron compounds being about 5.0, said IIb group organic compounds having the general formula:

wherein M is zinc, cadmium or mercury, R is a hydrocarbon radical, and R′ is halogen or the same as R.

4,214,927
GRANULAR PROPELLANT

Kazuhiro Inoue, Aichi, and Fumio Matsui, Handa, both of Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

Filed Nov. 27, 1978, Ser. No. 964,040
Claims priority, application Japan, Nov. 30, 1977, 52-143603
Int. Cl.[2] C06B *45/00*
U.S. Cl. 149—2 1 Claim

1. A globular or flat double-base granular propellant consisting mainly 5–80 parts by weight of nitroglycerine and 90–15 parts by weight of nitrocellulose, said nitrocellulose being formed into a three-dimensional structure by the crosslinking reaction of 2–20 parts by weight of a polyfunctional isocyanate.

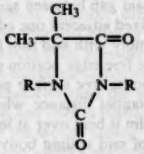
4,214,928
DIMETHYL HYDANTOIN BONDING AGENTS IN SOLID PROPELLANTS

John P. Consaga, Waldorf, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

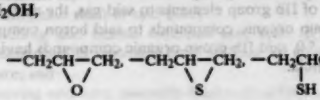
Continuation-in-part of Ser. No. 514,332, Oct. 9, 1974, abandoned. This application Nov. 29, 1976, Ser. No. 745,519
Int. Cl.[3] C06B *45/10*
U.S. Cl. 149—19.9 7 Claims

1. In combination with a composition which is selected from the group consisting of a propellant and an explosive and wherein said composition comprises a polymeric binder selected from the group consisting of epoxy terminated polybutadiene, carboxyl terminated polybutadiene, hydroxyl terminated polybutadiene, mercaptyl terminated polybutadiene, episulfide terminated polybutadiene, epoxy terminated polyether, carboxyl terminated polyether, hydroxyl terminated polyether, mercaptyl terminated polyether, episulfide terminated polyether, and liquid copolymer systems selected from the group consisting of polybutadiene-styrene and polybutadiene-acrylonitrile having functional groups selected from the group which consists of epoxy terminal groups, carboxyl terminal groups, hydroxyl terminatal groups, mercaptyl terminal groups, and episulfide terminal groups, and an oxidizer selected from the group consisting of ammonium nitrate, potassium perchlorate, ammonium perchlorate, cyclotetramethylene tetranitramine (HMX) and cyclotrimethylene trinitramine (RDX), wherein the improvement comprises:

means for preventing dewetting of said composition by the addition of a dimethylhydantoin bonding agent of the formula



wherein R is selected from the group consisting of $-CH_2CH_2OH$,



$-CH_2CH{=}CH_2$, and $-CH_2CH_2COOH$ and wherein, said bonding agent prevents dewetting by complexing with said binder and said oxidizer.

4,214,929

LIQUID MONOPROPELLANTS CONTAINING DISSOLVED COMBUSTION MODIFIERS

Albert T. Camp, Welcome; Kurt F. Mueller, and George W. Nauflett, both of Oxon Hill, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 14, 1975, Ser. No. 559,186
Int. Cl.³ C06B *43/00*
U.S. Cl. 149—109.4 **18 Claims**

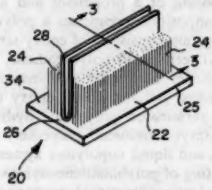
1. In a liquid propellant having at least one ballistic modifier therein, the improvement comprising a substantially single phase solution of the liquid propellant and a combustion modifier solution wherein the ballistic modifier is dissolved in at least one solvent selected from the group consisting of an alkoxypolyethyleneglycol ether and a bis alkoxy formal.

4,214,930

WEATHERSTRIP AND METHOD FOR SEALING A GAP

Allen J. Burrous, Hemlock, N.Y., assignor to Schlegel Corporation, Rochester, N.Y.

Filed May 29, 1979, Ser. No. 42,999
Int. Cl.² D04H *11/00*; E06B *7/22*
U.S. Cl. 156—1 **14 Claims**



1. A weatherstrip for sealing a gap between members movable relative to one another between non-aligned and aligned positions, said weatherstrip comprising:

A. a backing strip for securing said weatherstrip to one of said members;

B. at least one sealing body having one surface portion thereof fixed to one face of said backing strip and extending longitudinally thereof and cooperating therewith for forming a sealing assembly, said sealing body extending from said face toward the other of said members to substantially close said gap between said members; and

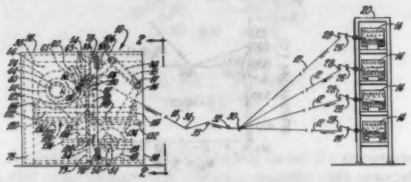
C. A flexible film fixed adjacent one edge portion thereof to said sealing assembly with said film transverse to said one face, the opposite free edge portion of said film extending beyond said opposite free surface portion of said sealing body for a substantial distance whereby said free edge portion of said film is bent over at least a part of said free surface portion of said sealing body when said members are moved to said aligned position.

4,214,931

METHOD AND APPARATUS FOR FORMING AND PROCESSING ROVING

Stanley P. Wojciechowski, Narragansett, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 740,581, Nov. 10, 1976, abandoned. This application Jun. 23, 1978, Ser. No. 918,625
Int. Cl.² D02G *3/40*
U.S. Cl. 156—169 **15 Claims**



1. The method of producing a wound strand package comprising advancing the strand into an enclosure, winding the strand into a package within the enclosure, enlarging the enclosure as the package increases in size, and heating the package in the enclosure during winding of the package.

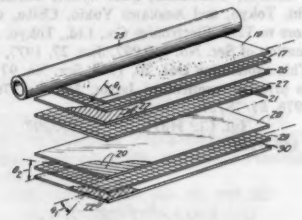
8. Apparatus for producing a wound strand package comprising an enclosure, rotatable means for winding the strand into a package within the enclosure, a relatively movable wall of the enclosure mounted for automated movement to enlarge the enclosure as the package increases in size, and means for heating the package within the enclosure at it is being wound.

4,214,932

METHOD FOR MAKING COMPOSITE TUBULAR ELEMENTS

Richard L. Van Auken, Bridgewater, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 801,028, May 27, 1977. This application May 17, 1979, Ser. No. 39,781
Int. Cl.² B65H *81/06*; F16L *9/14, 9/16*
U.S. Cl. 156—187 **9 Claims**



1. A method for fabricating a composite tubular shaft for transmitting forces and for sustaining axial and torque bearing forces, said shaft having a tubular metal core encased in a sheath of fiber reinforced resin, said method comprising:

coating the periphery of said tubular core with a structural metal adhesive in an amount ranging from about 0.020 to 0.040 lb/ft^2;

forming a plurality of quadrangular laminated plies of sheet material having a length greater than the width and having a first woven fiberglass cloth layer and a second resin impregnated continuous unidirectional reinforcing fiber layer, said sheet material having a width at least twice the diameter of said core and only in whole multiples thereof, the fibers in said fiberglass cloth layer oriented at about 0° and about 90° with respect to the length of said sheet material, and the continuous fibers in said reinforcing fiber

layer being oriented at an angle of 5° to about 12° with respect to the length of said sheet material;

arranging each successive ply with respect to the preceding ply so that the continuous fibers in each reinforcing fiber layer are in opposite directional orientation with respect to the continuous fibers in the reinforcing fiber layer of the preceding ply;

wrapping the so arranged plies around the adhesive coated core to form an assembly; and;

heating the assembly at a temperature sufficient to cause the resin to cure.

4,214,933

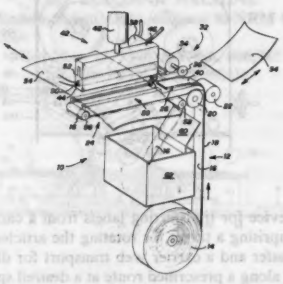
APPARATUS FOR AND METHOD OF DEPOSITING ADHESIVE STRIPS

Joseph W. A. Off, Irving; Judson H. Early, Dallas, and William B. Greer, Grand Prairie, all of Tex., assignors to Haggar Company, Dallas, Tex.

Filed Oct. 25, 1977, Ser. No. 845,450

Int. Cl.² B32B *31/00*; C09J *5/06*

U.S. Cl. 156—238 **11 Claims**



7. Apparatus for depositing adhesive strips on a length or piece of material, which comprises:

a driven roller for advancing a ribbon along a predetermined input path;

said ribbon including a backing layer and a layer of activatible adhesive, and being oriented so that the adhesive layer faces the material;

means including an idler roller in engagement with the driven roller for measuring the length of ribbon advanced therebetween along the input path;

said driven roller being responsive to the measuring means to advance predetermined lengths of ribbon along the input path;

structure located along the input path for supporting the adhesive ribbon adjacent the side of material on which adhesive strips are to be deposited;

cutting means responsive to the measuring means and located along the input path prior to the supporting structure for selectively effecting substantial crosswise separations in the adhesive layer of the ribbon to form strips of adhesive carried on the backing layer;

said cutting means comprising a rotary milling cutter mounted for displacement across the input path to provide separations of substantial width only in the adhesive layer of the ribbon between successive adhesive strips;

head means located adjacent the input path opposite the supporting structure and responsive to the measuring means for selectively engaging each strip of adhesive, the material and at least a portion of the supporting structure; and

means for activating the adhesive during engagement between the ribbon and material to attach the adhesive strip to the material.

11. A method of depositing onto a length or piece of material adhesive strips formed from an elongate ribbon including a layer of activatible adhesive and a backing layer, comprising the steps of:

feeding the ribbon along a predetermined input path with the adhesive layer facing the material;

advancing the ribbon past cutter means a distance corresponding to the desired length of adhesive strip;

interrupting movement of the ribbon;

actuating the cutter means between advancements of the ribbon to provide a substantial crosswise separation in the adhesive layer of the ribbon thereby forming successive adhesive strips carried on the backing layer;

said cutting step being carried out by a rotary milling wheel selectively traversing the ribbon to provide a substantial gap across the adhesive layer thereof so that successive strips of adhesive remain well defined during the engaging step;

activating each adhesive strip;

engaging the material and ribbon to effect deposition of each activated strip thereon without stringing between successively deposited strips; and subsequently disconnecting the backing layer from each deposited adhesive strip.

4,214,934

PROCESS FOR COATING WOVEN TUBING OF FIBRILLATED TAPE WITH SYNTHETIC THERMOPLASTICS

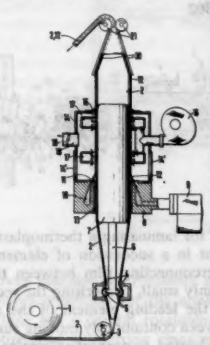
Hartmut Upmeier, Lengerich of Westphalia; Horst Schmidt, Kattenvenne, and Hans-Joachim Brauner, Bad Iburg, all of Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich of Westphalia, Fed. Rep. of Germany

Continuation of Ser. No. 772,130, Feb. 25, 1977, abandoned. This application Jul. 27, 1978, Ser. No. 928,560

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1976, 2608455

Int. Cl.² B29D *23/05*

U.S. Cl. 156—244.11 **4 Claims**

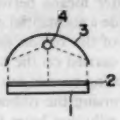


1. A process for coating woven thermoplastic tubing of fibrillated tape with synthetic thermoplastic material, comprising continuously advancing and opening woven tubing; providing backing for the open tubing from the inside; forming a superatmospheric pressure chamber surrounding the opened tubing; extruding, orienting and cooling plastics material tubing within the superatmospheric pressure chamber, the plastics material tubing, when extruded, surrounding the woven tubing and having a larger diameter than the woven tubing; forcing the extruded, oriented and cooled plastics material tubing in a soft condition against the woven tubing; and cooling the combined woven tubing and plastics material.

4,214,935
PROCESS FOR FUSION-BONDING OF RESINS

Kazuyoshi Nagai, 17-6, Kumisawa-Cho, Totsuka-Ku Yokohama City, Kanagawa Pref., Japan

Filed Apr. 5, 1979, Ser. No. 27,170
Int. Cl.[2] B05D 3/06; B29C 27/02
U.S. Cl. 156—272 1 Claim



1. A process for fusion-bonding of resins, which comprises applying a layer of a powdery of filmy thermoplastic resin having a light transmittance lower than 20% and a melting point of 40° to 250° C. to a substrate and fusion-bonding the resin layer to the substrate by emission energy of a flash discharge lamp, wherein the electric input energy J (joule) of the flash discharge lamp is controlled so that the following relation to the weight of the resin layer is established:

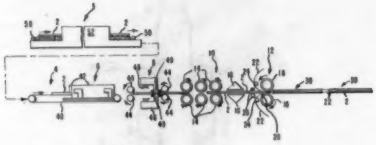
$$4000 \geqq J/(\frac{NG}{\Sigma S}) \geqq 380$$

wherein J stands for the electric input (joule) necessary for one radiation, N stands for the area (cm^2) of the radiation region by one radiation, G stands for the total weight (g) of the resin layer in the radiation region by one radiation, and ΣS stands for the total radiation area (cm^2) of the resin layer in the radiation region by one radiation.

4,214,936
LAMINATION PROCESS

Matthew A. Del Bianco, Audubon, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 24, 1978, Ser. No. 954,086
Int. Cl.[2] B32B 31/20, 31/10; C23F 1/02
U.S. Cl. 156—302 9 Claims



1. A process for laminating a thermoplastic polymeric film to each element in a succession of elements, by which the amount of interconnecting film between the laminated elements is uniformly small, comprising the sequential steps of

(a) gripping the leading element of the succession of elements between continuously moving surfaces, at least one of which is heated, to preheat at least one face the element and continuously advancing the element to a nip formed between converging surfaces, at least one of which is heated,

(b) supplying a continuous length of polymeric film to the upstream side of the nip without contact with the converging surfaces and advancing the film through the nip in response to movement of the converging surfaces of the nip, within which the film is heated by contact with a heated converging surface,

(c) in response to advancement of the preheated element a fixed distance immediately upstream of the nip, initiating movement of the converging surfaces to grip and advance the preheated element through the nip with pressure contact between the heated film and the heated face by which the polymeric film is laminated to the element, the linear speed of the element and film passing through the nip being higher than the linear speed of advancement of the element to the nip,

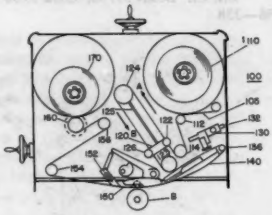
(d) discontinuing the movement of the converging surfaces in response to passage of the element a fixed distance immediately downstream of the nip, and

(e) repeating steps (a) through (d) for remaining elements in the succession of elements.

4,214,937
APPLICATION OF INDICIA TO ARTICLES

Friedrich H. H. Geurtsen, Holliston, Mass., and Waldeman Kebbel, Bremen, Fed. Rep. of Germany, assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Jun. 8, 1978, Ser. No. 913,775
Int. Cl.[2] B32B 31/00
U.S. Cl. 156—361 5 Claims



1. In a device for transferring labels from a carrier web to articles comprising a turret for rotating the articles past a site of label transfer and a carrier web transport for directing the carrier web along a prescribed route at a desired speed, which prescribed route includes the site of label transfer,

an improved carrier web transport comprising:

web dispensing and collecting means;

a capstan web drive near the web collecting means for pulling the carrier web through the prescribed route during a period of label transfer, which capstan web drive exerts no pull on the web during interim periods between the periods of label transfer;

a dancer roll which is movable in a slot and is subjected to a force toward one end of the slot, which force is less than the pull exerted in the opposite direction by the capstan web drive during periods of label transfer; and

a double gate at the other end of said slot including first and second jaws which alternately clamp the carrier web, the first jaw only during periods of label transfer and the second jaw only during interim periods;

wherein said prescribed route comprises respectively the web dispensing means, the first jaw, the dancer roll, the second jaw, the site of label transfer, the capstan web drive, and the web collecting means;

whereby the double gate and dancer roll collect a carrier web surplus from said web dispensing means during interim periods and release this surplus past the labelling site under the influence of the capstan web drive during periods of label transfer.

4,214,938
SENSING AND LOCKING DEVICES

Anthony V. J. Figg, Spalding, England, assignor to Norprint Limited, England

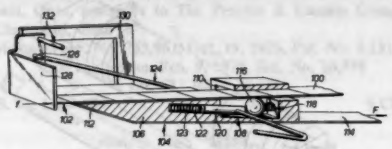
Filed Dec. 15, 1978, Ser. No. 969,965
Claims priority, application United Kingdom, Dec. 17, 1977, 52599/77
Int. Cl.[2] B32B 31/00
U.S. Cl. 156—361 10 Claims

1. A sensing and locking device for controlling the operation

of a mechanism in response to a force generated by an article movable by the mechanism, said device comprising

a sensing member movable on contact with an article,

means defining a wedge surface, and



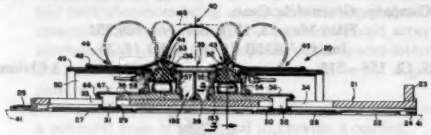
at least one rollable member arranged to co-operate with the wedge surface to lock a part of the mechanism as a result of a force applied to the sensing member being transmitted to the rollable member so that the rollable member is displaced to co-operate in generating an arresting force on the said part of the mechanism.

4,214,939

TIRE BUILDING MACHINE

George E. Enders, Salem, Ohio, assignor to NRM Corporation, Akron, Ohio

Filed Mar. 15, 1978, Ser. No. 886,742
Int. Cl.[2] B29H *17/12, 17/26*
U.S. Cl. 156—398 58 Claims



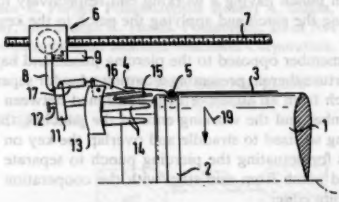
1. A tire building machine comprising a radially expanding annular elastomeric bead lock, an annular shaping bladder integral with said bead lock, and passage means in said bead lock for inflating said bladder through said bead lock.

4,214,940

WRAPPING-OVER DEVICE FOR A TIRE ASSEMBLY DRUM

Harry Rost, Munich, Fed. Rep. of Germany, assignor to Metzeler Kautshuk AG, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 802,525, Jun. 1, 1977, abandoned. This application May 16, 1978, Ser. No. 906,618
Int. Cl.[2] B29H *17/22*
U.S. Cl. 156—402 16 Claims



1. A wrapping over device for a rotatable solid body tire assembly drum having an axial centerline for wrapping over the tire body edges projecting beyond a bead when the assembly drum is expanded and pressed in position, said wrapping over device comprising:

an arcuate support;

at least three conical finger means mounted on said support and defining a curve, and each of said conical finger means being positioned in the direction of rotation of the tire assembly drum, closer to the tire assembly drum axial center line for applying an increased pressure on said tire body projecting edge in the direction of rotation, an extension of said finger means meeting at a common point wherein each successive said finger means exert an increasing force on the body edges;

a plate shaped pressing roller rotatably mounted on said support at a position between said conical finger means;

a pivot drive means pivotally mounting said support for rotation about an axis disposed at right angles to the assembly drum axial centerline, said pivot drive means including a first work cylinder for pivoting said support about said axis at right angles at the assembly drum; and

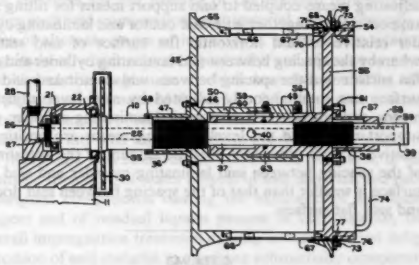
parallel drive means mounting said pivot drive means for movement in a direction parallel to the tire assembly drum axial centerline.

4,214,941

TIRE DRUM SUPPORT

Arthur N. Horr, Uniontown, and Clifford A. Landsness, Akron, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Oct. 2, 1978, Ser. No. 948,059
Int. Cl.[2] B29H *17/16*
U.S. Cl. 156—414 7 Claims



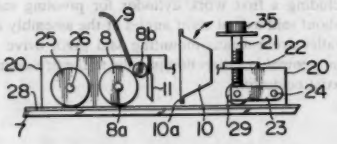
1. A power driven machine for rotatably supporting a tire carcass in an inflated condition for the application of tread rubber, said machine has a central rotatable shaft, a pair of laterally spaced tire-bead supporting rings mounted on said shaft in an air-tight manner, said pair of rings supporting a tire and cooperative therewith to define an inflatable chamber, means for adjusting the axial spacing of said rings, means for supplying compressed air to said chamber for inflation, means for rotating said rings in unison, one of said rings being removably mounted, a locking device mounted on said one ring for locking said one ring into position, a passageway extending through said one ring and through said locking device for connecting said chamber to atmosphere, said locking device operative in a first position to secure said one ring in a locked condition to close said passageway to atmosphere to permit inflation of said chamber and operative in a second position to open said passageway to atmosphere.

4,214,942

APPARATUS FOR PRODUCING A PHOTO-POLYMER PLATE HAVING RELIEF IMAGE AREAS THEREON

Michio Inoko, Koganei; Shinichi Kawatsuji, Fuji; Toshiie Matsui, Mitaka, and Shuu Yoshida, Kiyose, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 908,776, May 23, 1978, abandoned. This application Apr. 16, 1979, Ser. No. 30,638
Claims priority, application Japan, May 24, 1977, 52-60338
Int. Cl.[2] B32B *31/00*
U.S. Cl. 156—500 **12 Claims**



1. In an apparatus for producing a photo-polymer plate having relief image areas thereon, including a photo-polymerizable material layer forming station comprising a substantially horizontal flat surface, and a carriage reciprocally movable through said station, said carriage having mounted thereon means for pouring said photo-polymerizable material onto a first sheet material placed on said flat surface of said station, thereby forming a layer of said photo-polymerizable material on said first sheet material, a doctor for levelling and preliminarily reducing the thickness of the photo-polymerizable material layer, means for feeding a second sheet material onto said photo-polymerizable material layer to form a laminated assembly of said first and second sheet materials with said photo-polymerizable material layer sandwiched therebetween, and a laminating cylinder disposed in rolling engagement with said second sheet material of said laminated assembly to finally reduce said photo-polymerizable material layer to a predetermined thickness, the improvement comprising support means having said laminating cylinder mounted thereon, and level adjusting means coupled to said support means for tilting said support means, together with said doctor and laminating cylinder relative to said horizontal flat surface of said station, whereby the spacing between said laminating cylinder and said flat surface and the spacing between said doctor and said flat surface are simultaneously adjusted by said level adjusting means, and wherein said doctor, said laminating cylinder, said support means and the level adjusting means are positioned relative to each other such that the amount of the adjustment of the spacing between said laminating cylinder and said flat surface is smaller than that of the spacing between said doctor and said flat surface.

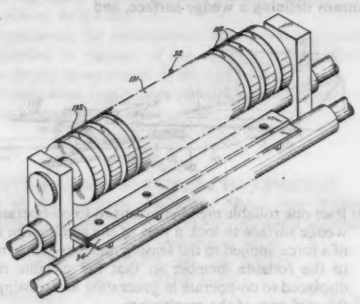
4,214,943

PASTER ROLLER FOR HIGH SPEED WEB HANDLING EQUIPMENT

Nathan Stern, W. Caldwell, N.J., assignor to Bobst-Champlain, Inc., Roseland, N.J.

Division of Ser. No. 661,768, Feb. 26, 1976, Pat. No. 4,151,594. This application Jun. 1, 1978, Ser. No. 911,360
Int. Cl.[2] B65H *19/18*
U.S. Cl. 156—504 **6 Claims**

1. A paster roller for use on high speed web handling equipment of the type having a support upon which a feed roll and a new roll are mounted, variable torque brakes associated with each roll exhibiting a substantially constant coefficient of friction at all web speeds and splicing means for splicing the web of the feed roll onto the web from the new roll, said splicing means comprising means for engaging the web from the feed roll and means for moving said engaging means to a position adjacent the periphery of the new roll to cause contact between the web from the feed roll and the web on the periphery of the new roll, said engaging means comprising a substantially cylindrical paster roller having means thereon adapted to conform to the curvature of the periphery of the new roll, said



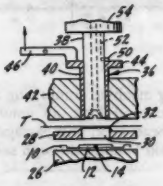
conforming means comprising a deflectable outer surface with annular grooves situated thereon.

4,214,944

ADHESIVE BONDING OF ASSEMBLY PARTS

Harold C. Lemke, Grayslake, Ill., assignor to American Can Company, Greenwich, Conn.

Filed May 23, 1978, Ser. No. 908,752
Int. Cl.[2] B32B *31/00*; B65D *17/26*
U.S. Cl. 156—518 **3 Claims**



1. Apparatus for separating an adhesive patch from an adhesive strip and for applying the patch to an opener key on a container lid, comprising:

an indexable turret having an anvil for supporting the lid;

a template for locating the key on the lid;

a coaxial piercing punch and bonding punch supported for movement independently of one another above the turret, each punch having a working end respectively for separating the patch and applying the patch to the key on the lid;

a die member opposed to the piercing punch and having an aperture therein presenting a cutting edge for separating a patch from an adhesive strip positioned between the die member and the working ends of the punches, the patch being so sized to straddle and overlap the key on the lid;

means for actuating the piercing punch to separate said so sized patch from said strip with the cooperation of said cutting edge;

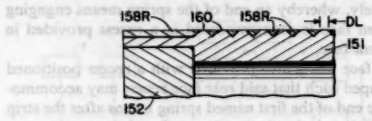
said bonding punch having passages supplied with negative atmospheric pressure to hold the separated patch in holding position on the end of the piercing punch until the patch is transferred to the key by the bonding punch;

and means for actuating the bonding punch independently of the piercing punch to advance the working end thereof through said aperture to force and transfer the separated patch from its holding position on the piercing punch into bonding contact with the key on the anvil-supported lid.

4,214,945
METHOD OF MAKING A PERFORATED TUBULAR MEMBER

Malcolm B. Lucas, and H. Robert Van Coney, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 733,961, Oct. 19, 1976, Pat. No. 4,151,240.
This application Feb. 9, 1979, Ser. No. 10,575
Int. Cl.² B32B *31/00*
U.S. Cl. 156—634 6 Claims



1. A method of making a perforated tubular member having a relatively thin tubular wall of a metal which wall is perforated by an array of radially inwardly tapered apertures, said method comprising the steps of:

forming a pattern cylinder having a cylindrical surface and a multiplicity of protruberances extending radially outwardly from said cylindrical surface, said protruberances being tapered radially outwardly and having a radially extending height greater than the thickness of said wall, said protruberances being so spaced and shaped that they comprise an inside-out negative pattern for said array of apertures and so that the composite of the spaces intermediate said protruberances comprise an inside-out negative pattern for said member;

covering said cylindrical surface and filling said spaces with a coherent mass of said metal to provide a coating;

converting said coating into an inside-out said tubular member by machining the radially outwardly facing areas of said coating and said protruberances to truncate said protruberances to uniform heights equal to the thickness of said wall and to cause said coating to have a thickness equal to the desired thickness of said tubular wall;

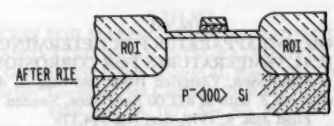
disassociating said inside-out tubular member from said pattern cylinder;

converting said inside-out tubular member into said tubular wall by longitudinally slitting it, reverse rolling it into its ultimate tubular shape, and seaming the slitting-formed-edges together in abutting relation.

4,214,946
SELECTIVE REACTIVE ION ETCHING OF POLYSILICON AGAINST SiO_2 UTILIZING SF_6-CL_2-INERT GAS ETCHANT

Lawrence E. Forget, Poughkeepsie; Robert A. Gdula, Pleasant Valley, and Joseph C. Hollis, Poughquag, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 21, 1979, Ser. No. 13,696
Int. Cl.² H01L *21/308*
U.S. Cl. 156—643 5 Claims

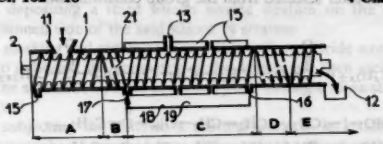


1. An improved technique of selective reactive ion etching of polysilicon against silicon dioxide, said technique being characterized by the employment of a plasma derived from a gas mixture consisting essentially of x parts of SF_6, y parts of Cl_2, and z parts of inert gas and wherein $x+y+z$ is essentially one hundred, $x+y$ is approximately ten, and x and y are respectively greater than zero.

4,214,947
PROCESS FOR THE CONTINUOUS IMPREGNATION OF A CELLULOSIC MATERIAL

Pierre Berger, Saint-Etienne, France, assignor to Creusot-Loire, Paris, France

Filed Feb. 6, 1979, Ser. No. 9,839
Claims priority, application France, Feb. 27, 1978, 78 05495
Int. Cl.² D21C *1/00*
U.S. Cl. 162—18 4 Claims



1. A process for the continuous impregnation of a cellulosic material in the form of chips, comprising passing said material continuously through apparatus comprising two parallel meshing screws having identical threads and which are rotated in the same direction inside a sheath which envelops them, said threads of said screws possessing successive zones of different pitch, wherein said material is passed continuously and in succession through a first zone of said screws for feeding and carrying said material downstream, a first braking zone of reverse pitch to the feeding and carrying zone which causes a first compression of said material, at least one subsequent zone for carrying said material downstream, in which, said material is brought into contact with a reagent introduced into said sheath, and a second braking zone of reverse pitch to the feeding and carrying zone which causes a second compression of said material, the braking zones possessing threads provided with apertures for the passage of the material downstream, during each said compression, said material passing through a series of alternate stages of increases in pressure, the relative magnitude of which increases gradually, and of drops in pressure, the relative magnitude of which decreases gradually, and the passage of said material through each braking zone causing a simple separation of said chips, which can assist the squeezing of the chips into said threads without decreasing the length of the fibers, said first compression causing the expulsion, in the upstream direction, of water present in said material, and each subsequent compression causing the expulsion of any spent reagent and of residual liquors present in said material, the overall impregnation treatment causing at least a partial deliginification of said material to eliminate substantially completely the effect of shear on the chips.

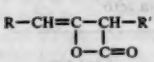
4,214,948
METHOD OF SIZING PAPER

Emil D. Mazzarella, Mountainside; Leonard J. Wood, Jr., Berkeley Heights, and Walter Maliczyszyn, Piscataway, all of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 535,442, Dec. 23, 1974, abandoned, which is a continuation-in-part of Ser. No. 493,311, Jul. 31, 1974, abandoned. This application Feb. 9, 1976, Ser. No. 656,408
Int. Cl.² D21H *3/08*
U.S. Cl. 162—158 2 Claims

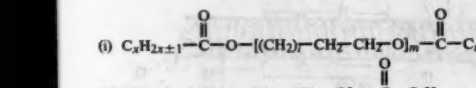
1. In a method for the internal sizing of paper products with a sizing emulsion consisting essentially of:

(a) from 80 to 97 parts by weight of a higher organic ketene dimer of the formula:



wherein R and R' are independently chosen from the group consisting of saturated and unsaturated alkyl radicals having at least eight carbon atoms, cycloalkyl radicals having at least six carbon atoms, aryl, aralkyl and alkaryl radicals;

(b) from 3 to 20 parts of a polyoxyalkylene alkyl or polyoxyalkylkene alkyl-aryl ether or the corresponding mono- or di-ester selected from the group consisting of:



wherein x and n are integers in the range of 8 to 20; R is an aryl radical; m is an integer in the range of 5 to 20; and i is 0 or 1; and

(c) water;

the improvement which comprises adding a mixture of components (a) and (b) to a paper stock system, in an amount sufficient to provide a concentration of ketene dimer of from 0.01 to 2.0%, based on dry fiber weight, whereby the sizing emulsion is formed in situ within the paper stock system at not more than about 25° C.

4,214,949

SUPPORTING DEVICE FOR A STRAINER BELT

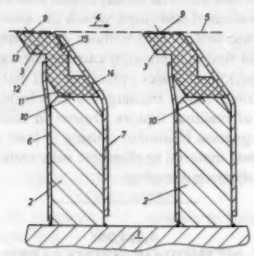
Christian Schiel, and Hans Flamig, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Dec. 15, 1978, Ser. No. 969,815

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1977, 2756994

Int. Cl.² D21F *1/54*

U.S. Cl. 162—352 **13 Claims**



1. A supporting device for a strainer belt in a paper making machine comprising:

a support element including a bearing surface,

a wear strip having a wear surface suitable, in use, for facing and supporting the strainer belt, and a bearing surface resting on and being supported by the support element bearing surface,

said support element including spring clamp means for clamping said wear strip to said support element bearing surface,

said wear strip having a symmetrical shape such that said strip bearing surface is substantially the same as said wear surface so that said strip bearing surface and said wear surface may be disposed interchangeably either to face the support element bearing surface or to face away from the support element bearing surface,

said strip bearing surface and said strip wear surface being on opposite sides of said strip,

said spring clamp means comprising first and second spring means being attached to the support element,

said strip including a front face and a rear face each of which is disposed at an angle to said wear surface, both spring means clampingly engaging the rear and front faces, respectively, whereby an end of the spring means engaging the front face is accommodated in a recess provided in said front face,

said rear face being also provided with a recess positioned and shaped such that said rear face recess may accommodate the end of the first named spring means after the strip is inserted such that its bearing surface becomes its wear surface.

4,214,950

STEEL FOR NUCLEAR APPLICATIONS

Jury F. Balandin, ulitsa Basseinaya, 117, kv.85, Leningrad; Vladimir I. Badanin, ulitsa Gagarina, 12, kv.21, Gatchina Leningradskoi oblasti; Igor V. Gorynin, ulitsa Gromova, 16, kv.50, Leningrad; Lev Y. Gluskin, ulitsa Grafova, 2, kv.37, Leningrad; Jury I. Zvezdin, Kostromskoi prospekt, 42, kv.23, Leningrad; Vladimir A. Nikolaev, ulitsa Radischeva, 14, kv.16, Gatchina Leningradskoi oblasti; Anatoly M. Parshin, prospekt Annikova, 11/1, kv.43, Leningrad; Nikolai N. Zorev, ulitsa Novinki, 6, korpus 2,kv.23, Moscow; Anatoly A. Astafiev, Sharikopodshipnikovskaya ulitsa, 2, kv.34, Moscow; Vladimir S. Dub, ulitsa Festivalnaya, 14, korpus 3, kv.372, Moscow; Oleg M. Vishkarev, ulitsa Sakhalinskaya, 4, kv.72, Moscow; Sergei I. Markov, ulitsa Ferganskaya, 28/7, kv.262, Moscow; Jury V. Sobolev, Novgorodskaya ulitsa, 16, korpus 2, kv.13, Kolpino Leningradskoi oblasti, and Valentin I. Kozlov, prospekt Lenina, 41, kv.56, Kolpino Leningradskoi oblasti, all of U.S.S.R.

Filed Nov. 2, 1977, Ser. No. 847,799

Int. Cl.² C22C *38/42, 38/44, 38/46*

U.S. Cl. 176—87 **7 Claims**

1. Steel consisting of the following components, in % by weight:

carbon	0.12–0.20
silicon	0.15–0.37
manganese	0.3–0.8
chromium	1.6–2.7
nickel	0.8–2.0
molybdenum	0.5–1.0
vanadium	0.05–0.15
cerium	0.002–0.08
copper	0.01–0.10
antimony-	0.0005–0.009
tin	0.0005–0.009
sulphur	0.001–0.02
phosphorus	0.002–0.02
iron	96.246–92.862.

4,214,951

METHOD AND APPARATUS FOR DETERMINING CRITICAL TEMPERATURES FOR CORROSION

Sven-Olof Bernhardsson, Västerled 108B, and Stig A. Alfredsson, Trollstigen 3, both of 811 00 Sandviken, Sweden

Filed Jun. 9, 1978, Ser. No. 914,178

Claims priority, application Sweden, Jun. 10, 1977, 7706789

Int. Cl.² G01N *27/46*

U.S. Cl. 204—1 T **14 Claims**

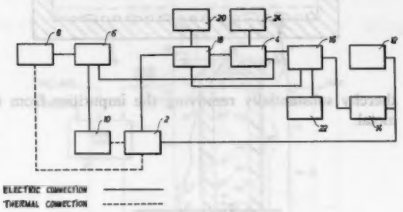
10. A method of determining critical temperatures for corrosion wherein

the temperature of an electrolyte in which test, counter, and

reference electrodes are submerged, is adjusted to a predetermined value;

whereafter the potential difference between the test and reference electrodes or the current intensity between the test and counter electrodes at constant potential difference between the test and reference electrodes is measured and compared with a preset reference voltage or current value,

said measuring and comparison process being interrupted when the measured potential difference or the current reaches the reference value;



whereupon the temperature of the electrolyte is altered and the measuring and comparison process is again carried out;

the preceding steps being repeated until the temperature is such that the measuring potential difference or the current does not reach said reference value during a predetermined time interval;

the temperature of the electrolyte then being recorded as the critical temperature.

4,214,952

ELECTROCHEMICAL TREATMENT PROCESS

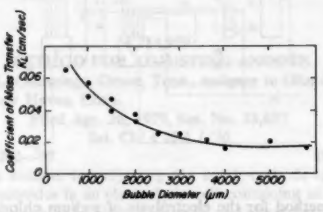
Mitsuhiro Sato, Aichi, and Noboru Kasahara, Ohbu, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Jul. 31, 1978, Ser. No. 929,448

Claims priority, application Japan, Feb. 28, 1978, 53-22586

Int. Cl.[2] C25C *1/00*; C25D *5/00, 11/02*; C25F *3/00*

U.S. Cl. 204—14 R **17 Claims**



1. An anodizing process in which a current density of 3–170 A/dm^2 is applied while forming bubbles in a treating solution at a temperature of 0°–100° C., which comprises containing 2–60 V/V% of dispersed bubbles having first quartile diameter being not more than 2,000 μm in the treating solution.

4,214,953

PROCESS FOR MAKING SEMICONDUCTOR DEVICES PASSIVATED BY AN INTEGRATED HEAT SINK

Greco Giovanni, via Monte Senario 41, Rome, Italy (00141), and Maurizio Tomassini, via Cassia 1020, Rome, Italy (00189)

Filed Nov. 16, 1977, Ser. No. 852,156

Claims priority, application Italy, Nov. 16, 1976, 52207 A/76

Int. Cl.[2] C25D *5/02*; C23C *15/00*; C25D *7/12*

U.S. Cl. 204—15 **5 Claims**

1. Process for making a semiconductor device passivated by an integrated heat sink comprising:

(a) providing a silicon N stratum and depositing boron by a thermal process onto a face of said stratum so to obtain a strongly doped P+ stratum

(b) depositing on the said P+ stratum a first silicon nitride stratum

(c) laying down by vaporization of a first doped multicrystalline silicon stratum on the said first silicon nitride stratum

(d) depositing a second silicon nitride stratum on the said first doped multicrystalline silicon stratum

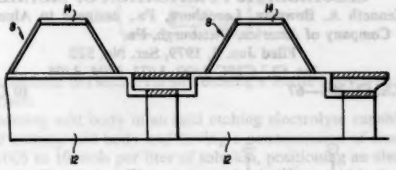
(e) growing in thickness a multicrystalline silicon stratum

(f) chemically thinning the said silicon N stratum on the side opposite to that on which the said boron deposit has been carried out

(g) depositing a third silicon nitride stratum on the said thinned side of the said silicon N stratum

(h) masking and etching the said third silicon nitride stratum to delineate the geometry of the device and then etching the silicon N stratum to form a plate having a Mesa structure

(i) subjecting the plate to a thermal cycle in an oxidizing atmosphere to cause boron diffusion in the silicon with the formation of a P+/N bond and at the same time the oxidation of the surfaces of the said Mesa structure



(j) glueing the said plate with a bonding agent to a working support

(k) masking and etching the said multicrystalline silicon stratum and the said second silicon nitride stratum to delineate a growth seat for a dissipator

(l) removing through masking and etching the said first multicrystalline silicon stratum and the said first silicon nitride stratum inside the said growth seat over an area that is slightly smaller than that of the said growth seat

(m) evaporating a metallic sheet for the contact on the said P+ stratum and then photoengraving it only for the lining of the growth seat

(n) carrying out electrolytic growth of a silver thermal dissipator

(o) removing the said working support and the bonding agent

(p) masking and etching the areas of the said third silicon nitride stratum up to expose a surface of the silicon N and

(q) evaporating a metallic sheet to contact of the said silicon and subsequently removing said sheet through photoengraving so to leave a sheet portion only on the said exposed silicon N surface.

4,214,954

PLATED METALLIC CATHODE WITH POROUS COPPER SUBPLATING

Han C. Kuo, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 901,897, May 1, 1978, Pat. No. 4,152,240, which is a continuation-in-part of Ser. No. 892,554, Apr. 3, 1978, Pat. No. 4,162,204. This application Dec. 4, 1978, Ser. No. 965,814

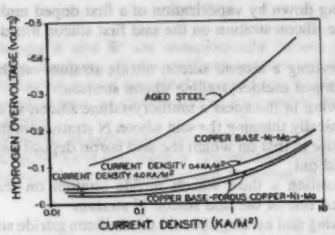
Int. Cl.[2] C25D *3/56, 3/38*

U.S. Cl. 204—32 R **4 Claims**

1. An improved method of making a hydrogen evolution, low overvoltage cathode for use in an electrolysis cell, which comprises the steps of:

(a) cleaning a conductive metal substrate;

(b) depositing upon said cleaned metal substrate a porous subcoating of from about 50 to about 200 microns thick-



ness of dendritic copper so as to increase the surface area of said cathode; and

(c) depositing upon said porous copper subcoated substrate a coating of a low overvoltage metal alloy.

4,214,955

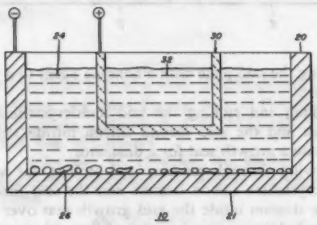
ELECTROLYTIC PURIFICATION OF METALS

Kenneth A. Bowman, Leechburg, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 2, 1979, Ser. No. 522

Int. Cl.² C25C *3/00, 3/02, 3/04, 3/06*

U.S. Cl. 204—67 **10 Claims**



1. A method of electrolytically removing impurities from metal comprising the steps of:

(a) providing a metal containing impurities in a molten state in a container having a porous membrane therein, the membrane having a porosity greater than 50% and up to about 97% and being capable of containing the molten metal and being permeable by a molten electrolyte; and

(b) electrolytically transferring metal through said membrane to a cathode in the presence of the electrolyte thereby substantially removing the impurities from the metal.

4,214,956

ELECTROLYTIC PURIFICATION OF METALS

Kenneth A. Bowman, Leechburg, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 2, 1979, Ser. No. 523

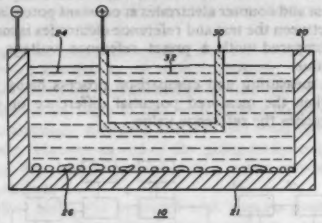
Int. Cl.² C25C *3/00, 3/02, 3/04, 3/06*

U.S. Cl. 204—67 **8 Claims**

1. A method of electrolytically removing impurities from metal comprising the steps of:

(a) providing a metal containing impurities in a molten state in a container having a porous membrane therein, the membrane having a thickness of less than 0.1 inch and having a porosity greater than 50% and up to about 97% and being capable of containing the molten metal and being permeable by a molten electrolyte; and

(b) electrolytically transferring metal through said membrane to a cathode in the presence of the electrolyte,



thereby substantially removing the impurities from the metal.

4,214,957

SYSTEM FOR ELECTROLYSIS OF SODIUM CHLORIDE BY ION-EXCHANGE MEMBRANE PROCESS

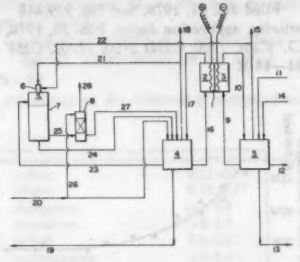
Shinsaku Ogawa, and Tsutomu Kanke, both of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 31, 1979, Ser. No. 8,187

Claims priority, application Japan, Feb. 15, 1978, 53-15383

Int. Cl.² C01B *1/34, 1/02*

U.S. Cl. 204—98 **2 Claims**



1. A method for the electrolysis of sodium chloride in an electrolytic cell divided by a cation exchange membrane into an anode chamber and a cathode chamber wherein an aqueous sodium chloride solution is introduced into said anode chamber, which comprises

(1) synthesizing hydrogen chloride gas from the chloride gas and the hydrogen gas generated in said electrolytic cell, utilizing an excessive amount of chlorine gas;

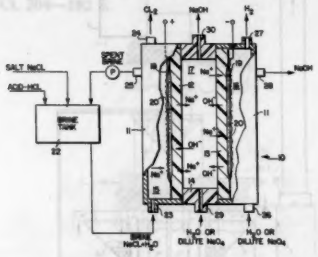
(2) absorbing the hydrogen chloride gas thus synthesized and the excess chlorine gas into the feed aqueous sodium chloride solution and/or the dilute aqueous sodium chloride solution, thereby dissolving the chlorine gas therein and controlling the hydrochloric acid concentration in the absorbing solution at 0.1 to 20 wt.%; and

(3) concentrating the dilute aqueous sodium chloride solution and/or the aqueous sodium hydroxide solution produced in the cathode chamber by utilizing the reaction heat and the absorption heat of the hydrogen chloride gas and the heat generated from the electrolytic cell.

4,214,958
ELECTROLYSIS OF ALKALI METAL HALIDES IN A THREE-COMPARTMENT CELL WITH A PRESSURIZED BUFFER COMPARTMENT

Thomas G. Coker, Waltham; Anthony B. LaConti, Lynnfield; Edward N. Balko, Wilmington, and George B. McGray, Wakefield, all of Mass., assignors to General Electric Company

Filed May 14, 1979, Ser. No. 38,812
Int. Cl.[2] C25B 1/34, 9/00
U.S. Cl. 204—98 26 Claims



1. A process for producing halogens which comprises electrolyzing an aqueous alkali metal halide anolyte between anode and cathode electrodes separated by at least two ion transporting, membranes forming anode, cathode and buffer compartments, the electrochemically active elements of at least one of said electrodes being physically bonded to one of said membranes at a plurality of points to form a unitary electrode-membrane, applying potential from a potential source to said bonded electrode by an electron current conductor in contact with the bonded electrode, introducing a catholyte to the cathode chamber, introducing a pressurized aqueous feed to the buffer compartment to maintain a positive pressure differential between the buffer and the other compartments to force said membranes outward and maintain firm contact between the electrochemically active bonded electrode and the electron current conductor structure.

4,214,959
METHOD FOR ADJUSTING ANODES

Thomas L. Cummings, Ocoee, Tenn., assignor to Olin Corporation, New Haven, Conn.

Filed Apr. 26, 1979, Ser. No. 33,657
Int. Cl.[2] C25B 1/36
U.S. Cl. 204—99 19 Claims

1. In a method for adjusting the anode-cathode space between electrodes in an electrolytic cell containing an electrolyte decomposable by electric current, said electrolyte being in contact with said electrodes, said electrodes being comprised of at least one anode set which is adjustable with respect to a liquid cathode in a spaced relationship, wherein said anode set has at least one electrode and a plurality of anode posts, and wherein a voltage is applied across said cathode and said anode set to develop an electric current flow through said electrolyte to effect decomposition thereof and said cell having operably connected to said adjustable anode set a motor drive means attached to raise and lower said adjustable anode set, wherein a series of N current and a series of N voltage measurements to said adjustable anode set is taken and an average current through and an average voltage across said anode set is calculated, the improvement which comprises, in combination,

(a) calculating a voltage coefficient, V_c, for said anode set,

(b) adjusting said anode-cathode space after a comparison of the calculated voltage coefficient, V_c, with a previously determining standard voltage coefficient, S, shows that said V_c exceeds a standard deviation range k_1, from said S,

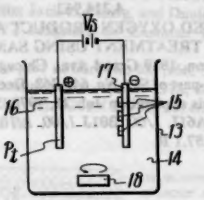
(c) further adjusting said anode-cathode space where a current analysis of said anode set shows that further adjustment is required,

(d) balancing the current to said anode set by adjusting selected anode post in said anode set when a measurement of current, I_S, to said anode set exceeds the deviation range k_2, from an average current, I_{SA}, to said anode set.

4,214,960
METHOD OF ELECTROLYTICALLY ETCHING FERRITE

Tomio Kobayashi, Tagajo, and Hidesuke Miyairi, Rihu, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 6, 1978, Ser. No. 912,994
Claims priority, application Japan, Jun. 14, 1977, 52-70231
Int. Cl.[2] C25F 3/02, 3/14
U.S. Cl. 204—129.65 15 Claims



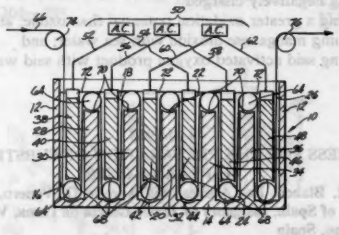
1. A method of electrolytically etching a ferrite body which comprises:

immersing said body in an acid etching electrolyte capable of etching said body and having a concentration of from 0.005 to 10 mols per liter of solution, positioning an electrode in said electrolyte in spaced relation to said body, the ratio of exposed surface area of the ferrite body and the surface area of said electrode being less than 10, and applying a unidirectional voltage of 3 to 20 volts between the ferrite body and said electrode, said ferrite body being at a negative voltage relative to said electrode.

4,214,961
METHOD AND APPARATUS FOR CONTINUOUS ELECTROCHEMICAL TREATMENT OF A METAL WEB

William H. Anthony, Manchester, Mo., assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Mar. 1, 1979, Ser. No. 16,120
Int. Cl.[2] C25F 3/00; C25D 17/00
U.S. Cl. 204—140 18 Claims



1. A method for the continuous electrochemical treatment of a metal web wherein said web is the chief current carrier and current paths between neighboring treatment cells are minimized, comprising the steps of:

(A) providing an electrochemical treatment cell;

(B) dividing said electrochemical treatment cell into a plurality of treatment cells by divider means comprising a first plurality of electrodes positioned in said treatment cell;

(C) filling said treatment cells with an electrolyte solution to a height substantially equal to the height of said divider means;

(D) providing a second plurality of electrodes in the electrolyte solution;

(E) passing current to said first and said second plurality of electrodes; and

(F) guiding said web through said plurality of treatment cells such that said web is continuously immersed in said electrolyte wherein said web is the chief current carrier and the electrolyte conductor path between said treatment cells is restricted by said divider means thereby minimizing electrical power loss.

4,214,962

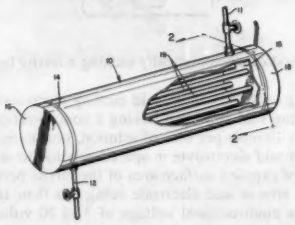
ACTIVATED OXYGEN PRODUCT AND WATER TREATMENT USING SAME

Andrew J. Pincon, 1819 Grand Ave., Chicago, Ill. 60602

Continuation-in-part of Ser. No. 645,363, Dec. 30, 1975, Pat. No. 4,124,467. This application Jul. 21, 1978, Ser. No. 927,140

Int. Cl.[2] A61L *1/00;* **B01J** *1/00, 1/10;* **C02B** *3/08*

U.S. Cl. 204—157.1 R **14 Claims**



2. A method of disinfecting water, comprising the steps of:

irradiating oxygen using a source of electromagnetic radiation having predominant wavelengths less than about 155 nm to form an activated oxygen product, said product having the properties of:

reducing the surface tension of said water;

having an ultraviolet spectrum, measured following irradiation in a polyvinyl chloride enclosure and subsequent dissolving of the product in sulfuric acid at a pH of 1.5, including absorbtion at 195 nanometers and at 254 nanometers;

being negatively charged;

having a greater oxidation potential than ozone; and

forming manganese dioxide with sea water; and

mixing said activated oxygen product with said water.

4,214,963

PROCESS FOR THE PREPARATION OF SUBSTITUTED 4H-PYRAN-4-ONES

Jose R. Blanco, Las Arenas, and Aurelio O. Venero, Lejona, both of Spain, assignors to Javier Garcia de Lama, Vecino de Bilbao, Spain

Filed Nov. 27, 1978, Ser. No. 963,688

Claims priority, application Spain, Dec. 6, 1977, 464809

Int. Cl.[2] B01J *1/10*

U.S. Cl. 204—158 R **10 Claims**

1. Process for obtaining substituted 4H-pyran-4-ones, wherein a substituted 2.3-dihydro-4H-pyran-4-one reacts in a solvent with N-bromosuccinimide in the presence of light and the illumination is effected with lamps having an emission spectrum between 250 nm and 800 nm in order to form a substituted 4H-pyran-4-one.

4,214,964

ELECTROLYTIC PROCESS AND APPARATUS FOR THE RECOVERY OF METAL VALUES

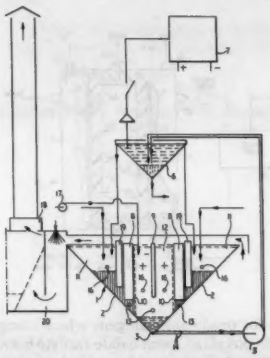
John F. Cannell, 55, Boddington Rd., Byfield, Daventry, Northamptonshire, England

Filed Mar. 12, 1979, Ser. No. 19,618

Claims priority, application United Kingdom, Mar. 15, 1978, 10250978

Int. Cl.[2] C25C *1/100*

U.S. Cl. 204—105 R **9 Claims**



1. A process for electrolytically recovering metal values from a solid concentrate which remains in the form of coarse particles or lumps when added to a liquid, characterised in that the concentrate is introduced into an electrolytic cell containing an aqueous electrolyte so that the concentrate is retained in proximity to the or each anode and kept out of contact with the or each cathode, and energising the cell so that electrolysis takes place and acid is released at the or each anode, which acid dissolves the said metal values to form cations which are discharged at the or each cathode, and insoluble impurities in the concentrate are released at the or each anode as fine particles which are separated by screening from the unreacted concentrate and accumulate in the bottom of the cell, and in that further concentrate is periodically or continuously added to the cell in the vicinity of the or each anode, the solid impurities are periodically and continuously removed from the cell bottom, and the water produced in the electrolytic reaction is removed by evaporation.

4,214,965

POLYMERS AND PROCESS FOR THEIR PREPARATION

William Rowe, Westfield, N.J., assignor to Polychrome Corporation, Yonkers, N.Y.

Continuation of Ser. No. 600,653, Jul. 21, 1975, abandoned, which is a continuation of Ser. No. 328,678, Feb. 1, 1973, abandoned. This application Jan. 11, 1979, Ser. No. 2,647

Int. Cl.[2] C08F *8/00*

U.S. Cl. 204—159.15 **15 Claims**

1. A photopolymerizable composition which is comprised of an admixture of:

I. a polymer which is substantially comprised of the reaction product of:

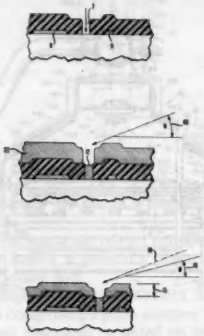
A. an organic, active hydrogen containing compound, which compound has an average active hydrogen functionality in the range of from 2.0 to about 2.2 with

B. an excess of an organic polyisocyanate so as to form an isocyanate terminated prepolymer, said prepolymer having been subsequently reacted with

C. an organic, active hydrogen containing compound, which compound has exactly one active hydrogen; said polymer having a molecular weight of from 5,000 to 50,000 with 0% free isocyanate groups; and

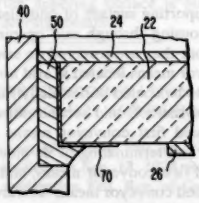
II. a polymerization initiator activatable by actinic light; and
III. a polymerizable ethylenically unsaturated component capable of forming a polymer by photoinitiated polymerization in the presence of said initiator.

4,214,966
PROCESS USEFUL IN THE FABRICATION OF ARTICLES WITH METALLIZED SURFACES
Gerard E. Mahoney, Branchburg, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 20, 1979, Ser. No. 22,186
Int. Cl.[2] C23C *15/00*
U.S. Cl. 204—192 E **10 Claims**



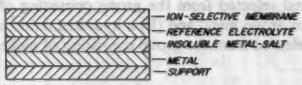
1. A process for depositing metallic material to form a metallic layer on a prescribed area of a substrate comprising the steps of masking the regions of said substrate bounding said area with a delineating material, depositing said metallic material, and removing said delineating material with its coating of said metallic material from said substrate CHARACTERIZED IN THAT the method of removing said delineating material comprises the step of removing at least a portion of said metallic material deposited on said delineating material by ion milling said deposited metallic material at an acute angle to said substrate such that said metallic layer on said prescribed area is substantially unaffected.

4,214,967
TECHNIQUE FOR REDUCING SOLID ELECTROLYTE CELL DRIFT
Alfred R. Pebler, Penn Hills, and Roswell J. Ruka, Churchill Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Nov. 8, 1977, Ser. No. 849,590
Int. Cl.[2] G01N *27/58*
U.S. Cl. 204—195 S **3 Claims**



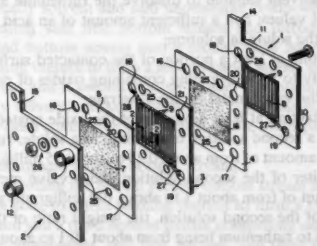
1. A method of securing a disc-shaped oxygen ion conductive solid electrolyte electrochemical cell within a tubular metal support member to minimize cell drift as a result of cell electrode deterioration, comprising the steps of:
disposing an oxygen transfer barrier in contact with the edge of said disc-shaped oxygen ion conductive solid electrolyte electrochemical cell, said barrier being a thin ceramic layer exhibiting negligible oxygen ion conductivity;
brazing said cell with a noble metal braze within said metal tubular support member, said oxygen transfer barrier substantially preventing the transfer of oxygen between said noble metal braze and said solid electrolyte electrochemical cell to prevent said noble metal braze from functioning as a cell electrode, said thin ceramic layer being of a material exhibiting a thermal expansion coefficient similar to that of the solid electrolyte electrochemical cell and being chemically inert with respect to said noble metal braze and said solid electrolyte electrochemical cell.

4,214,968
ION-SELECTIVE ELECTRODE
Charles J. Battaglia; Jack C. Chang, and Daniel S. Daniel, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of Ser. No. 687,966, May 19, 1976, abandoned. This application Apr. 5, 1978, Ser. No. 893,656
Int. Cl.[2] G01N *27/30, 27/46*
U.S. Cl. 204—195 M **30 Claims**



1. A dry-operative ion-selective electrode comprising:
(a) a dried internal reference electrode comprising the dried residue of a solution of a salt and a hydrophilic polymeric binder in a solvent for the polymer and the salt; and
(b) in contact with said reference electrode a hydrophobic ion-selective membrane of predetermined uniform thickness in regions thereof intended for contact with a sample for analysis, said membrane comprising a hydrophobic binder having distributed therein an ion carrier dissolved in a carrier solvent.

4,214,969
LOW COST BIPOLAR CURRENT COLLECTOR-SEPARATOR FOR ELECTROCHEMICAL CELLS
Richard J. Lawrance, Hampstead, N.H., assignor to General Electric Company, Wilmington, Mass.
Filed Jan. 2, 1979, Ser. No. 489
Int. Cl.[2] C25B *9/04, 15/08;* H01B *1/04;* H01M *2/14*
U.S. Cl. 204—255 **13 Claims**



1. A bipolar current collecting, fluid distributing, cell separating element for electrochemical cells for conducting current from the anode electrode of one cell unit to cathode electrode of the adjacent cell unit comprising:
(a) a pressure molded aggregate of electrically conductive carbon/graphite particles and thermoplastic fluorocarbon

polymer resin particles in a weight ratio of 2.5:1 to 16:1 whereby said molded aggregate has a bulk resistivity which is less than 4×10^{-3} ohm/inch,

(b) said molded aggregate having a fluid impervious main body, at least one recessed chamber on one side of said main body and a plurality of spaced, conductive projections extending from the base of said chamber for contacting and permitting current flow between the electrode of adjacent cell unit,

(c) means communicating with said recessed chambers to permit introduction and removal of fluids.

4,214,970

NOVEL ELECTROCATALYTIC ELECTRODES

Placido M. Spaziante, Lugano, Switzerland, and Antonio Nidola, Milan, Italy, assignors to Diamond Shamrock Technologies, S.A., Geneva, Switzerland

Filed Jan. 15, 1979, Ser. No. 3,729

Int. Cl.² C25B *9/00, 11/03, 11/06;* **B01J** *23/40*

U.S. Cl. 204—265 **18 Claims**

1. An electrocatalyst consisting of essentially of (A) at least one metal selected from the group consisting of silver and a platinum group metal and (B) a hydrated oxide of at least one metal selected from the group consisting of nickel and manganese.

4,214,971

ELECTRODE COATING PROCESS

Henrik R. Heikel, and James J. Leddy, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 787,418, Apr. 14, 1977, Pat. No. 4,112,140. This application Aug. 14, 1978, Ser. No. 933,303

The portion of the term of this patent subsequent to Sep. 5, 1995, has been disclaimed.

Int. Cl.² B05D *5/12*

U.S. Cl. 204—290 F **39 Claims**

1. A method to produce an electrode comprising sequentially:

(a) contacting at least a portion of a valve metal substrate with a first solution containing, as a solute, ruthenium in an amount of from about 0.25 to about 50 milligrams per milliliter of the first solution and a valve metal in an amount of from about 0.06 to about 50 milligrams per milliliter of the first solution, the weight ratio of the valve metal to ruthenium being about 1:4 to about 2:1; at least one solvent suitable to dissolve the ruthenium and valve metal values; and a sufficient amount of an acid to maintain the solute in solution;

(b) heating at least a portion of the contacted surface sufficiently to form a coating containing oxides of ruthenium and the valve metal on the substrate;

(c) contacting at least a portion of the oxide coated surface with a second solution containing, as a solute, ruthenium in an amount of from about 0.25 to about 25 milligrams per milliliter of the second solution and a valve metal in an amount of from about 1 to about 100 milligrams per milliliter of the second solution, the weight ratio of the valve metal to ruthenium being from about 20:1 to about 2:1 and greater than the valve metal to ruthenium ratio of the first solution; at least one solvent suitable to dissolve the ruthenium and valve metal values; and a sufficient amount of an acid to maintain the solute in solution;

(d) heating at least a portion of the contacted surface sufficiently to form a coating containing the oxides of ruthenium and the valve metal on the substrate.

4,214,972

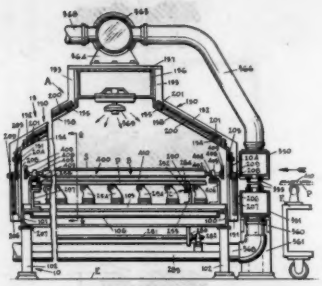
SHEET HANDLING APPARATUS

Eugene Shintock, Allen Park, Mich., assignor to Shatterproof Glass Corporation, Detroit, Mich.

Continuation of Ser. No. 822,736, Aug. 8, 1977, abandoned, which is a continuation of Ser. No. 674,911, Apr. 8, 1976, abandoned. This application Jul. 19, 1978, Ser. No. 925,939

Int. Cl.² C23C *15/00*

U.S. Cl. 204—298 **1 Claim**

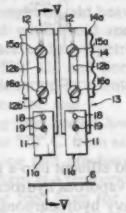


1. The combination with apparatus for cathodically sputtering thin films of a selected coating material from a cathode onto the upper surface of glass sheets in a coating chamber containing a low pressure ionized gas atmosphere, and a metal platen having a major upper supporting surface on which the glass sheet is freely supported horizontally in contact therewith during the coating of said glass sheet, the improvement which comprises a horizontally elongated substanially closed housing having an entrance end for receiving the glass sheets and an exit end positioned in line with and contiguous to the entrance end of said sputtering apparatus, one side wall of said housing being provided with a horizontally elongated opening through which the platens are introduced horizontally into said housing, a first conveyor means extending longitudinally within said housing for receiving the platens horizontally thereon and for delivering them through the exit end of said housing directly into the entrance end of said sputtering apparatus, means positioned exteriorly of and in close proximity to said opening in the side wall of said housing for cleaning the entire major supporting surface of said platens as said platens pass into said housing through said opening in the side wall thereof and before they are received on said conveyor means, a second conveyor means located in said housing for receiving the glass sheets to be coated horizontally thereon as they enter the entrance end thereof, said second conveyor means being located above said first conveyor means in spaced parallel relation thereto and terminating at its inner end short of the inner end of said first conveyor means, and means for driving the first and second conveyor means forwardly at substantially the same speed such that as the major portion of the leading end of the glass sheet passes beyond said second conveyor means it will drop onto the platen and when the trailing end of the glass sheet leaves the second conveyor means it will also drop onto said platen and be carried forwardly to said coating apparatus.

4,214,973
BLOOD SERUM APPLICATOR FOR USE IN CATAPHORETIC APPARATUS

Kazuhiko Nakamura, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1978, Ser. No. 963,324
Claims priority, application Japan, Dec. 15, 1977, 52-167689[U]
Int. Cl.[2] G01N *27/28*
U.S. Cl. 204—299 R 9 Claims



1. A serum applicator for use in a cataphoretic apparatus, comprising:

a plurality of penpoints, each of said penpoints comprising a plate member having a generally planar serum applying surface on its lower end;

a plurality of penpoint support members, each of said support members comprising a plate member having a respective one of said penpoints mounted on its lower end and having a hook formed on its upper end, each of said penpoint support members having a planar side surface;

a support arm in the form of a plate member having planar side and top surfaces;

a plurality of coupling means equal in number to the number of penpoints, each of said coupling means for slidably coupling a respective said penpoint support member to said support arm such that said planar side surface of its respective penpoint support member lies adjacent said planar support surface of said support arm and such that said respective penpoint support member is freely slidable with respect to said support arm in a direction perpendicular to said planar top surface of said support arm between an uppermost position and a lowermost position; said hook contacting said top surface of said support arm when said penpoint support member is in said lowermost position and orienting said planar serum applying surface of said penpoint in a plane generally parallel to said top surface of said support arm, each of said coupling means coupling its respective penpoint support member to said support arm in such a manner that its respective penpoint support member is pivotable with respect to said support arm independently of the remaining said penpoint support members, whereby the orientation of said planar serum applying surface of each penpoint may change slightly when said serum applying surface is placed in contact with a serum bearing member.

4,214,974
PROCESS FOR HYDROGENATION OF COAL

Helmut Wurfel, Zur Wolfsfels 21, 6653 Blieskastel, Fed. Rep. of Germany

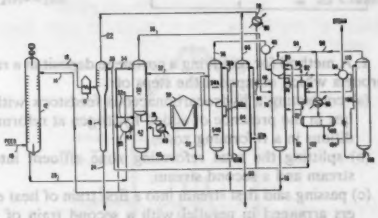
Continuation-in-part of Ser. No. 850,204, Nov. 10, 1977, abandoned. This application Sep. 13, 1978, Ser. No. 941,945
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1976, 2651253
Int. Cl.[2] C10G *1/06*
U.S. Cl. 208—10 11 Claims

1. In a process for the hydrogenation of coal wherein a finely divided coal-oil slurry is pumped under pressure through preheating means and into a hydrogenation reactor wherein the slurry is hydrogenated in the presence of hydrogen and a hydrogenation catalyst, the improvement which comprises subjecting the hydrogenation products from said reactor to a first phase separation to obtain a first liquid fraction and a first gaseous fraction, separating from said first gaseous fraction a second liquid fraction at an elevated temperature having a boiling range between about 200° C. and about 500° C., and preheating said slurry by directly mixing at least a portion of said second liquid fraction with said slurry under pressure.

4,214,975
SOLVENT RECOVERY PROCESS FOR PROCESSING OF HYDROCARBONS

Hyman R. Davis, Glen Ridge; Wagih I. Nasr, Belleville; Siegfried M. Roethlin, Glen Rock, and Harold D. Sherwood, Oradell, all of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed May 10, 1978, Ser. No. 904,710
Int. Cl.[2] C10G *21/28*
U.S. Cl. 208—33 13 Claims



1. In a process for refining a petroleum hydrocarbon fraction selected from the group consisting of a vacuum gas oil, a deasphalted residual oil, and an asphalt-containing residual oil comprising undesirable components of cyclic, naphthenic, olefinic, aromatic, nitrogenous, and sulfurous compounds, or mixtures of any of such compounds wherein undesirable components are separated from said petroleum hydrocarbon fraction by a selective solvent selected from the group consisting of furfural, phenol, N-methyl pyrollidone, nitrobenezene and mixtures thereof and wherein said selective solvent is recovered by evaporation techniques from a solvent-enriched extract phase including said extracted undesirable components, an improved process for recovering said selective solvent from said solvent-enriched phase, which comprises:

(a) heating said solvent-enriched phase and introducing the heated solvent-enriched phase into a first flash zone to effect flashing thereof to form a first vapor stream comprising solvent and a first bottom stream comprising substantially solvent and said undesirable components;

(b) heating said first bottom stream and introducing the heated bottom stream into a second flash zone to effect flashing thereof to form a second vapor stream comprising solvent and a second bottom stream comprising substantially solvent and said undesirable components, said second flash zone being operated at above atmospheric pressure;

(c) heating said second bottom stream;

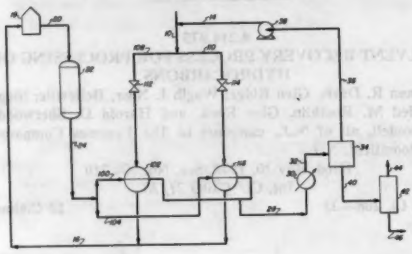
(d) introducing the heated second bottom stream into a third flash zone to effect flashing thereof to form a third vapor stream and a third bottom stream comprising said undesirable components, said first, second, and third flash zones being operated at incrementally increased ranges of temperatures and pressures whereby the vapor from any successive flash zone is used as a source of heat in the preceding flash zone to effect vaporization in said preceding flash zone; and

(e) recovering said selective solvent from said vapor streams.

4,214,976
METHOD FOR REMOVING CORONENE FROM HEAT EXCHANGERS

Walter S. Kmak, Scotch Plains, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 2, 1979, Ser. No. 9,228
Int. Cl.[2] C10G 9/16, 39/00; C07C 15/12
U.S. Cl. 208—48 R 8 Claims



1. A method for removing a coronene deposit in a reforming process which comprises the steps of:

(a) contacting a hydrocarbonaceous feedstock with a catalyst in the presence of added hydrogen at reforming conditions in a reforming zone;

(b) splitting the total reforming zone effluent into a first stream and a second stream;

(c) passing said first stream into a first train of heat exchangers arranged in parallel with a second train of heat exchangers;

(d) passing said second stream into said second train of heat exchangers, said reforming zone effluent comprising coronene, at least a portion of which deposits in said heat exchangers;

(e) separating the heat exchanged total reforming zone effluent into a hydrogen-rich gaseous phase and a liquid hydrocarbon phase comprising normally liquid hydrocarbons and normally gaseous hydrocarbons, the improvement which comprises reducing the flow of said first stream in said first train of heat exchangers to produce a temperature sufficient to condense at least a portion of said reformer effluent therein such that the resulting condensate contacts said coronene deposit, and simultaneously increasing the flow of said second stream in said second train of heat exchangers.

4,214,977
HYDROCRACKING OF HEAVY OILS USING IRON COAL CATALYST

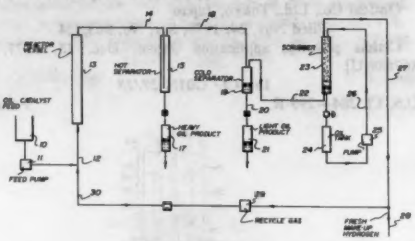
Ramaswami Ranganathan, Ottawa; Jean-Marie D. Denis, Munster, and Barry B. Pruden, Ottawa, all of Canada, assignors to Energy Mines and Resources Canada, Ottawa, Canada

Division of Ser. No. 951,013, Oct. 13, 1978, abandoned. This application Mar. 14, 1979, Ser. No. 20,505
Claims priority, application Canada, Oct. 24, 1977, 289320
Int. Cl.[2] C10G 13/04, 9/16, 1/06; B01J 23/70
U.S. Cl. 208—108 14 Claims

1. A process for hydrocracking a heavy hydrocarbon oil, a substantial proportion of which boils above 524° C. which comprises:

(a) passing a slurry of said heavy hydrocarbon oil and an iron-coal catalyst in the presence of 500–50,000 s.c.f. of hydrogen per barrel of said hydrocarbon oil through a confined hydrocracking zone, said hydrocracking zone being maintained at a temperature between about 400° and 490° C., a pressure above 500 psig and a space velocity between about 0.5 and 4.0 volumes of heavy hydrocarbon oil per hour per volume of hydrocracking zone capacity,

(b) removing from said hydrocracking zone a mixed effluent containing a gaseous phase comprising hydrogen and vaporous hydrocarbons and a liquid phase comprising heavy hydrocarbons, and



(c) separating said effluent into a gaseous stream containing hydrogen and vaporous hydrocarbons and a liquid stream containing heavy hydrocarbons.

4,214,978
CATALYTIC CRACKING

James V. Kennedy, Westfield, and Lawrence B. Dight, High Bridge, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Menlo Park, N.J.

Division of Ser. No. 958,550, Nov. 8, 1978, Pat. No. 4,171,286, which is a continuation of Ser. No. 757,828, Jan. 10, 1977, abandoned. This application May 29, 1979, Ser. No. 42,918
Int. Cl.[2] C10G 11/04; B01J 8/24, 23/64
U.S. Cl. 208—120 2 Claims

1. In a process for the continuous cyclic fluid catalytic cracking of hydrocarbons with a zeolitic cracking catalyst in the absence of added hydrogen in a reaction zone to produce lower boiling hydrocarbons wherein cracking results in the deposition on the fluid cracking catalyst particles of a solid deposit of combustible hydrocarbons, the catalyst particles containing said deposit are regenerated in a regeneration zone by oxidation in the presence of air at elevated temperature to burn off said deposit, and the catalyst is recycled to said reaction zone where it is used to crack hydrocarbons in the absence of added hydrogen,

the improvement which comprises cycling said particles of cracking catalyst through said reduction and regeneration zones in physical admixture with a minor amount relative to the quantity of said particles of cracking catalyst of fluidizable particles consisting essentially of calcined spray dried microspheres of kaolin clay impregnated with a minor amount of a platinum compound, said platinum compound being present in amount sufficient to promote the oxidation of carbon monoxide to carbon dioxide in a said regeneration zone, said impregnated microspheres having a low surface area as measured by the B.E.T. nitrogen absorption method.

4,214,979
METHOD OF THERMALLY CRACKING HEAVY PETROLEUM OIL

Hajime Nakanishi, Fujisawa; Kiyoji Ozaki, Yokohama; Toshio Shinozuka, Kamakura; Masato Izumi, Yokohama; Takaaki Aiba, Ichihara; Hisatsugu Kaji, Ichihara; Yutaka Sumida, Ichihara, and Takao Ishihara, Ichihara, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi and Chiyoda Chemical Engineering & Construction Co., Yokohama, both of, Japan

Filed Feb. 3, 1978, Ser. No. 874,948
Claims priority, application Japan, Feb. 4, 1977, 52/010632
Int. Cl.[2] C10G 9/36, 9/12, 9/16
U.S. Cl. 208—128 3 Claims

1. In a method of thermally cracking a heavy petroleum oil by heating said heavy petroleum oil to a temperature of 450° to

520° C. in a first furnace and introducing the thus heated heavy petroleum oil into a reactor wherein said heated heavy petroleum oil is brought into contact with an unreactive gas at a temperature of 400° to 2,000° C., thereby thermally cracking said heated heavy petroleum oil at a reaction temperature of 400° to 440° C., the improvement comprising:

(a) using two or more of said reactors;

(b) heating a portion of said heavy petroleum oil to a temperature of 300° to 350° C. in a second furnace;

(c) precharging alternatively each reactor with the heated oil from step (b), said portion of oil in step (b) corresponding to 3 to 30% by weight of said heavy petroleum oil to be thermally cracked within said reactor, prior to the introduction of said heated heavy petroleum oil at a temperature of 450° to 520° C., and keeping the thus precharged heavy petroleum oil at a temperature of 300° to 350° C. within said reactor; and

(d) alternatively feeding said heated heavy petroleum at a temperature of 450° to 520° C. from said first furnace into said reactors containing said precharged portion of said heavy petroleum oil kept at a temperature of 300° to 350° C., and switching the feed from the first reactor to the second reactor when the introduction of said heated heavy petroleum oil at a temperature of 450° to 520° C. into said first reactor is completed, whereby the formation of coke as a byproduct and the rupture of the reactor as a result of a radical temperature rise are prevented.

4,214,980

CATALYTIC HYDROREFORMING PROCESS

Jean-François Le Page, Rueil-Malmaison; Germain Martino, Poissy, and Jean Miquel, Paris, all of France, assignors to Societe Francaise des Produits pour Catalyse, Rueil-Malmaison, France

Filed Dec. 9, 1977, Ser. No. 858,971
Claims priority, application France, Dec. 9, 1976, 76 37413
Int. Cl.² C07C *35/08*
U.S. Cl. 208—139 **42 Claims**

1. A process for reforming hydrocarbons or producing aromatic hydrocarbons at a temperature from 510° to 600° C. under a pressure from 1 to 18 kg/cm², at an hourly space velocity of from 1 to 10 volumes of liquid charge per volume of catalyst, the molar ratio hydrogen/hydrocarbon being from 5 to 20, said process being conducted in the presence of a catalyst comprising an alumina carrier and, expressed by weight with respect to alumina:

(a) from 0.05 to 0.6% of platinum,

(b) from 0.01 to 2% of rhenium,

(c) from 0.05 to 3% of thallium or indium, and

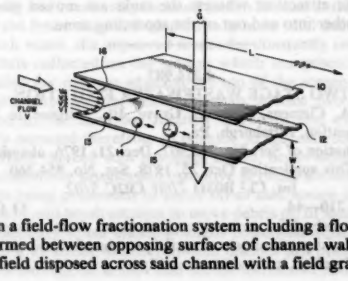
(d) from 0.1 to 10% of halogen.

4,214,981

STERIC FIELD-FLOW FRACTIONATION

John C. Giddings, Salt Lake City, Utah, assignor to University of Utah, Salt Lake City, Utah

Filed Oct. 23, 1978, Ser. No. 953,655
Int. Cl.² B03B *5/00*
U.S. Cl. 209—155 **15 Claims**



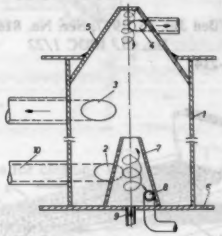
1. In a field-flow fractionation system including a flow channel formed between opposing surfaces of channel walls and a force field disposed across said channel with a field gradient in a direction of one of said wall surfaces which operates as a restraining wall, the improvement comprising a method for steric field-flow fractionation including the step of applying a force field in sufficient relative strength with respect to particles contained within said channel to cause migration of a given class of said particles toward and against said restraining wall such that the mean Brownian displacement of said particles from the restraining wall is approximately equal to or less than the mean radius of said class of particles.

4,214,982

PROCESS AND DEVICE FOR REMOVING PRINTER'S INK FROM A FIBER SUSPENSION

Lothar Pfalzer, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Aug. 21, 1978, Ser. No. 935,259
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1977, 2738782
Int. Cl.² B03D *1/02, 1/14*
U.S. Cl. 209—164 **22 Claims**



1. A process for removing ink from a fiber suspension, which suspension was made from pulped inked paper, wherein the suspension was made by the addition of chemicals to the pulped inked paper, comprising the steps of:

introducing the suspension into a container relatively nearer to the bottom of the container; flowing the suspension rotationally around the container, for causing the ink and chemicals to form a foam that separates from the suspension;

removing the suspension, from which the foam has separated, from the container relatively nearer to the top of the container; and

discharging the floating foam from the container in the vicinity of the axis of rotation of the suspension around the container and in the area of the axis of the container near the top of the container and above the removal of the suspension.

4,214,983

RECOVERY OF COPPER FROM COPPER OXIDE MINERALS

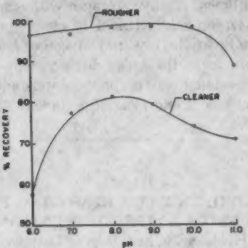
William T. Rule, Hibbing, Minn., assignor to The Hanna Mining Company, Cleveland, Ohio

Filed Jan. 16, 1979, Ser. No. 3,878
Int. Cl.² B03D *1/02*
U.S. Cl. 209—166 **11 Claims**

1. In the method of recovering copper from ores containing copper as atacamite/paratacamite by froth flotation of the copper, the improvement comprising using as a promoter collector, compounds having the formula

$$RC(OH)=N-O^{\ominus}H_2N^{\oplus}R^1R^2$$

wherein R is an aliphatic group containing from about five to ten carbon atoms or an aromatic group containing from six to about ten carbon atoms, and R^1 and R^2 are each independently alkyl groups containing from one to about five carbon atoms.

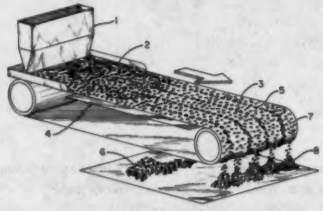


4,214,984

MAGNETIC SEPARATION

Robert C. MacElvain, 725 N. Randolph Ave., Eufaula, Ala. 36027

Filed Jul. 15, 1977, Ser. No. 816,029
Int. Cl.² B03C *1/22*
U.S. Cl. 209—214 **81 Claims**



1. A process for effecting a magnetic separation of a material comprising a relatively more magnetic material and a relatively less magnetic material comprising passing the material, by means of a nonmagnetic force, through a plurality of regions, each of which comprise a relatively more magnetic segment and an adjacent relatively less magnetic segment having a width of at least 0.05 times the width of the magnetic segment, such that the plurality of regions are arranged so as to comprise alternating relatively more magnetic and relatively less magnetic segments, thereby creating a resultant magnetic force, which regions are aligned at an angle of other than 90° in the plane of the surface of the regions to the direction of the result of nonmagnetic force, and wherein the material being processed is maintained in substantially one plane while being passed through the plurality of regions.

4,214,985

METHOD FOR SEWAGE TREATMENT WITH BACTERIA

Bonnie J. Bodenrader, 11 Castle Heights Rd., Andover, Mass. 01810

Filed Nov. 27, 1978, Ser. No. 963,675
Int. Cl.² C02C *1/02*
U.S. Cl. 210—11 **23 Claims**

1. A method for the treatment of sewage sludge which treatment renders the sludge environmentally acceptable which includes:

inoculating the sludge with Lactobacillus the sludge per se containing the nutritional requirements for the lactobacilli; and

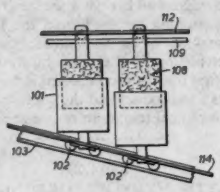
admixing a fermentable carbohydrate in an effective amount with the sludge, the Lactobacillus inoculated and the carbohydrate admixed in an amount sufficient to lower the pH of the sludge to below 4.5 to render the sludge substantially free of coliform, and pathogenic bacteria.

4,214,986

MAGNETIC SEPARATOR FOR SEPARATING MAGNETIZABLE PARTICLES FROM A FLUID, METHOD AND APPARATUS

James H. P. Watson, St. Austell, and James P. E. Jones, Par, both of England, assignors to English Clays Lovering Pochin & Company, Limited, Cornwall, England

Continuation of Ser. No. 792,015, Apr. 28, 1977, abandoned.
This application Oct. 12, 1978, Ser. No. 950,543
Claims priority, application United Kingdom, Apr. 29, 1976, 17567/76
Int. Cl.² B01D *35/06*
U.S. Cl. 210—42 S **16 Claims**



1. A method of separating magnetisable particles from a fluid utilizing a plurality of interconnected open-topped tanks and a plurality of fluid-permeable masses of magnetisable material, which method comprises performing the following operations on each tank;

(a) at least partially filling the tank, with the associated mass of magnetisable material therein, with fluid containing magnetisable particles such that the fluid and magnetisable particles contact the mass of magnetisable material, the fluid and particles being prevented from escaping from the tank during filling;

(b) either before, during or after filling, moving the tank into a separating zone in which a magnetic field is established;

(c) holding the fluid containing the magnetisable particles, within the tank, substantially stationary with respect to the mass of magnetisable material for a finite period of time after completion of steps (a) and (b);

(d) providing relative movement between the tank and the mass of magnetisable material as the tank passes through the separating zone until the mass of magnetisable material is outside the tank, such that the tank and mass of magnetisable material move vertically apart from one another whereby the fluid is drained from the mass of magnetisable material;

(e) after draining, moving the tank out of the separating zone; and

(f) removing magnetisable particles which have been retained within the mass of magnetisable material by magnetic attraction; wherein the tanks are moved one after another into and out of the separating zone.

4,214,987

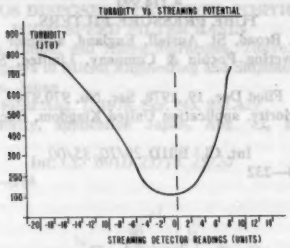
TWO STAGE WASTEWATER FLOTATION

Ogden A. Clemens, Downers Grove, Ill., assignor to Dravo Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 752,907, Dec. 21, 1976, abandoned.
This application Oct. 25, 1978, Ser. No. 954,360
Int. Cl.² B03D *1/00*; C02C *5/02*
U.S. Cl. 210—44 **11 Claims**

1. A method for removing particulates from wastewater, wherein said particulates comprise proteins, fats, oil or minerals by flotation, to produce readily recoverable skimmings,

comprising: a first stage, said first stage including adjusting the streaming potential of a wastewater to approximately zero, in the absence of any added trivalent metal coagulant compound and by the use of an inorganic acid or base, forming a flow path of the thus adjusted water to a confined location, supplying dense quantities of small bubbles within said confined location, entering overflow from the confined location into a long flotation zone, forming a buoyant first floc in the long flotation zone, and separating the first floc from a first treated wastewater; and a second stage including adding a metal coagulant to



said first treated wastewater, introducing the wastewater and coagulant into a compact and dense zone of fine bubbles originating from a bubble supply, churning the first treated wastewater with said bubbles to form aggregates of bubbles, coagulant and particulates, said aggregates remaining unseparated from the wastewater flow, flowing substantially all of the wastewater flow together with the unseparated aggregates out of said zone, introducing the aggregates and wastewater into a second flotation zone to permit the aggregates to rise to the surface of the wastewater and form a second buoyant floc, and separating the second flock from the wastewater.

4,214,988

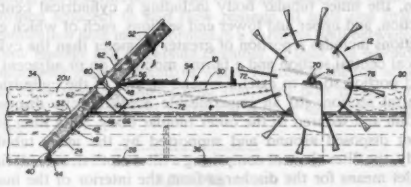
DITCH WATER CLEANING APPARATUS

John D. Naffziger, Rte. 1, P.O. Box 34, Loma, Colo. 81524

Filed Apr. 27, 1978, Ser. No. 900,417

Int. Cl.² B01D *35/16*

U.S. Cl. 210—159 **5 Claims**



1. In a ditch water cleaning apparatus of the type including an open ended frame having an intake end mountable in the ditch effective to channel the water therethrough, and an upwardly and rearwardly inclined screen located at the intake end of the frame sized and adapted to remove solid debris from the ditch water, the improved means for constantly removing the debris collected on the screens which comprises: a shaft journalled for rotation adjacent the top of the screen in substantially perpendicular relation thereto, at least two brushes fastened to the shaft for rotation therewith and extending radially outward therefrom in position to successively sweep the surface thereof with a wiping action, brush drive means connected to the brushes and operative to rotate the latter, said brushes being positioned to move off of said screen during a portion of said brush rotation to move debris off of said screen, and stationary brush cleaning means positioned adjacent one edge of said screen to intercept said brushes just prior to said brushes moving back onto said screen to remove debris from said brushes prior to said brushes moving back onto said screen.

4,214,989

APPARATUS FOR CLEANING A SCREEN DISPOSED IN A WATER CHANNEL

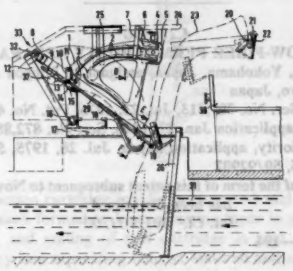
Siegfried Rudolph, Hanover, and Josef Nöring, Burgwedel, both of Fed. Rep. of Germany, assignors to Schreiber-Klaranlagen, Dr.-Ing. Aug. Schreiber GmbH & Co. KG, Langenhagen, Fed. Rep. of Germany

Filed Feb. 22, 1979, Ser. No. 14,103

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807574

Int. Cl.² B01D *35/16*

U.S. Cl. 210—159 **15 Claims**



1. An apparatus for cleaning liquids such as sewage which comprises

means forming a longitudinal liquid flow channel having a rectangular cross-section;

a screen positioned across said flow channel, said screen comprising spaced-apart vertically oriented bars;

a single elongated rake arm means;

a screen comb means pivotally connected to one end of said elongated rake arm means, said screen comb means being pivotable around a horizontal axis;

an elongated support arm, one end of which is pivotally connected to the end of said elongated rake arm means opposite the end to which is attached the screen comb means, the pivotal connection therebetween having a horizontal pivot axis, and the other end of which is pivotally connected to a fixed supporting structure located on the rear side of said screen and positioned across said flow channel through which liquid such as sewage flows;

a driving mechanism for moving said rake arm means such that by directly moving said rake arm means along a pathway and as a result of constrained movement of the end of said rake arm means due to pivotal attachment with said elongated support arm, said screen comb means will engage with the bottom of said screen and move upwardly so as to remove material from between the bars thereof, said driving mechanism including a fixedly mounted curved guide track means defining said pathway, a number of fixedly mounted rotatable sprocket wheels, an endless chain means fixedly and pivotally connected at one point to said rake arm means at a point along the length thereof and mounted over a portion of each of said rotatable sprockets wheels to pass along said curved guide track means and follow said pathway, and a driving means connected to one of said rotatable sprocket wheels to cause said one sprocket wheel to rotate and cause said endless chain means to move in one direction along said guide track means;

wherein the pivotal connection between said endless chain means and said rake arm means includes a pin means which extends laterally from said endless chain means to extend beyond said guide track means on which said

endless chain travels, and a single rotatable support roll mounted on said laterally extending pin means between the point where the endless chain means is connected thereto and the point where the rake arm means is connected thereto, said single rotatable support roll being mounted for contact with said guide track means such that said rake arm means is supported in cantilever fashion with respect to said guide track means, and

wherein said guide track means, said pin means, and said support roll are mounted such that said support roll rotates along and in contact with said guide track means concentrically with respect to a longitudinal central plane passing through said flow channel, and wherein the cross-sectional vertical central planes defined by said guide track means and said rake arm means are essentially equidistant from the longitudinal vertical central plane passing through said flow channel.

4,214,990

HOLLOW-FIBER PERMEABILITY APPARATUS

Yasushi Joh, Yokohama, Japan, assignor to Nippon Zeon Co. Ltd., Tokyo, Japan

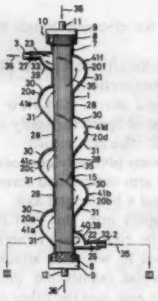
Division of Ser. No. 707,513, Jul. 22, 1976, Pat. No. 4,124,510. This application Jan. 27, 1978, Ser. No. 872,884

Claims priority, application Japan, Jul. 28, 1975, 50/91716; Jul. 30, 1975, 50/92902

The portion of the term of this patent subsequent to Nov. 7, 1995, has been disclaimed.

Int. Cl.[2] **B01D** *31/00*

U.S. Cl. 210—194 **4 Claims**



1. In a hollow-fibre permeability apparatus, comprising:

a housing defining an interior including a permeating region;

a bundle of permeable-wall hollow fibres disposed at least in said permeating region of said housing;

a first inlet and means for causing a first fluid to flow into said first inlet and through said housing adjacent the exterior wall surfaces of said fibres;

a first outlet for passage of said first fluid out of said housing;

a second inlet and means for causing a second fluid to flow into said second inlet and through said housing inside said fibres such that materials selectively permeate through the walls of said fibres; and

portions of said housing in said permeating region being of enlarged cross-section relative to said bundle to define spaces between said bundle and a wall of said housing into which at least part of said first fluid passes during its passage from said first inlet to said first outlet, the shape of said enlarged cross-section portions promoting cross-flow of said first fluid relative to the length of said fibres,

the improvement comprising means for imparting a lamelliform flow to said first fluid comprising a plurality of circular openings defining said first inlet, said openings through which said first fluid must pass extending transversely across one side of a cross-section of said permeating region in a direction substantially perpendicular to the length direction of said fibres, said circular openings being defined in the outer wall of one of said enlarged cross-section portions whereby the lamelliform flow of said first fluid first engages only the portion of said bundle exposed to said one enlarged cross section portion and said lamelliform flow progresses from said one portion of enlarged cross section through said bundle, then into a second said enlarged cross section portion, then cross-flows through the bundle, and thereafter progresses to said first outlet.

4,214,991

TUBE PRESSURE FILTERS

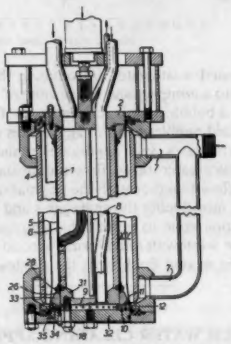
Bernard H. Broad, St. Austell, England, assignor to English Clays Lovering Pochin & Company, Limited, St. Austell, England

Filed Dec. 19, 1978, Ser. No. 970,974

Claims priority, application United Kingdom, Dec. 19, 1977, 52808/77

Int. Cl.[2] **B01D** *29/10, 35/00*

U.S. Cl. 210—232 **4 Claims**



1. In a tube pressure filter of the kind which is adapted for high pressure operation and comprises (a) a pair of generally coaxial inner and outer tubular bodies arranged one within the other and adapted to be supported in a generally upright position, the inner tubular body including a cylindrical central section, and upper and lower end sections, each of which end sections includes a portion of greater diameter than the cylindrical central section and a fairing mounted on or adjacent to said portion so as to extend around an end of the cylindrical central section, (b) an impermeable elastic sleeve disposed within and secured to the outer tubular body, (c) a filter element disposed around and supported by the inner tubular body, the filter element comprising a filter cloth sleeve, (d) first outlet means for the discharge from the interior of the inner tubular body of filtrate which has passed through the filter element and through apertures in the inner tubular body, (e) second outlet means for the discharge from the tube pressure filter of particulate solid, and (f) means for displacing the tubular bodies axially relative to one another between a first position and a second position; the arrangement being such that in the first position of said tubular bodies they cooperate with each other to define a closed chamber of annular cross section which is divided into generally coaxial and non-intercommunicating inner and outer compartments by said impermeable elastic sleeve, the inner compartment including an inlet for feed material comprising a mixture of a liquid and a particulate solid to be pressure filtered and the outer compartment including an inlet for a hydraulic fluid under pressure, and in the second position of said tubular bodies said chamber is open to enable the particulate solid material to be discharged from the inner compartment; the improvement which comprises constructing each of the fairings and the ends of the filter cloth sleeve so that each end of the filter cloth sleeve is or can be

secured to the outwardly facing surface of one of said fairings, each fairing having an annular groove formed in its outwardly facing surface to enable an end of the filter cloth sleeve to be secured to said outwardly facing surface; said improvement enabling said filter cloth sleeve to be fitted during replacement of a said filter cloth without completely removing said inner tubular body from said outer tubular body, thereby reducing the time consumed in replacing said filter cloth sleeve.

4,214,992

WATER COLLECTING AND DISTRIBUTING APPARATUS DISPOSED IN A LOWER PORTION OF HIGH SPEED FILTER BASIN

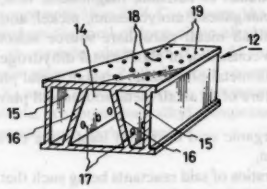
Kenji Sasano, Chiba, and Ichiro Shiramasa, Tokyo, both of Japan, assignors to Mitsui Engineering and Shipbuilding Co., Ltd., Tokyo, Japan

Filed Aug. 7, 1978, Ser. No. 931,429

Claims priority, application Japan, Aug. 12, 1977, 52-107841[U]

Int. Cl.² B01D *23/16, 23/20*

U.S. Cl. 210—274 **5 Claims**



1. A water collecting and distributing apparatus to be disposed in a lower portion of a high speed filter basin, said apparatus comprising a plurality of blocks positioned and aligned in the lower portion of the filter basin, a gravel layer formed on the blocks, a filter medium formed on the gravel layer, a water collecting dam for collecting filtrate passing through said blocks, an air introducing means for feeding air to the filter basin through said blocks and a water introducing means for feeding water to the filter basin through said blocks, wherein each said block has a flow passage for air and water formed in the central portion thereof, at least one water dispersing chamber formed adjacent to said flow passage, at least one first communication hole means formed in a partition wall between said flow passage and dispersing chamber, at least one second hole means for jetting air and/or water, formed in the top wall of said flow passage, and at least one third hole means for jetting only water, formed in the top wall of said dispersing chamber.

4,214,993

APPARATUS FOR SEPARATING FLUIDS

Jesse G. Forsythe, Jr., Media, Pa.; Donald R. Johnson, Wilmington, and Linda M. St. Onge, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 3, 1978, Ser. No. 892,507

Int. Cl.² B01D *27/02*

U.S. Cl. 210—282 **12 Claims**

1. Apparatus for processing fluids comprising, in combination,

an extraction cartridge having an enlarged middle portion, tapered inward toward its lower end, adapted to receive said fluids and a tubular lower portion communicating with said middle portion,

separating column material disposed in said lower portion, the bottom end of said lower portion defining a nozzle for fluids passing through said lower portion,

a first container, the interior lower end of said container defining longitudinal interiorly extending radial guides for positioning said lower portion of said extraction cartridge and protecting said nozzle,

the top portion of each of said extraction cartridge and said first container defining enlarged sections of equal inside diameter,

a closure member insertable into the top end of either said extraction cartridge or said first container,

said extraction cartridge middle portion and said first container each formed to have a mating taper to permit the nesting and sealing of said cartridge in said container, whereby said separating column material and said nozzle are protected and sealed when said closure member is inserted in said cartridge and said cartridge is nested in said first container.

4,214,994

REVERSE OSMOSIS MEMBRANE

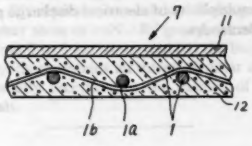
Motoi Kitano, Kawanishi; Isao Sumita, Toyonaka, and Yukio Sakamoto, Mino, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 14, 1977, Ser. No. 861,191

Claims priority, application Japan, Dec. 20, 1976, 51-153834; Mar. 10, 1977, 52-026823; Apr. 4, 1977, 52-038811; Apr. 4, 1977, 52-038812; Apr. 5, 1977, 52-039256; Apr. 25, 1977, 52-048179

Int. Cl.² B01D *25/04*

U.S. Cl. 210—490 **11 Claims**



1. An asymmetric high flux reverse osmosis membrane of the Loeb-type comprising, in sequential combination,

(1) a thin active layer in contact with liquid supplied to said membrane structure;

(2) a high polymer gel layer carried on and supporting said active layer; and

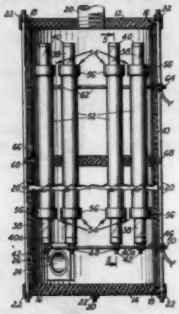
(3) at least one porous non-elastic sheet contained within and surrounded on all sides by said gel layer and spearated from said active layer for increasing the flux of said membrane.

4,214,995

OZONE GENERATOR

Laurence M. Saylor, 4968 Rickman Rd. NE., Salem, Oreg. 97303

Filed Nov. 1, 1976, Ser. No. 737,216
Int. Cl.[2] B01K *1/00*; C01B *13/11*
U.S. Cl. 250—539 2 Claims



1. An ozone generator comprising:
(a) an elongated hollow housing closed at both ends,
(b) an air inlet adjacent one end of the housing,
(c) an ozone outlet adjacent the opposite end of the housing,
(d) a plurality of elongated electrode assemblies in the housing extending longitudinally therein and spaced apart from each other, and
(e) an electrically non-conductive air barrier wall disposed transversely within the housing intermediate the ends of the housing and electrode assemblies, forming a seal about the inner wall of the housing and the outer surfaces of the outer electrodes of the electrode assemblies for preventing the passage of air between the spaced electrode assemblies from the air inlet to the ozone outlet,
(f) each electrode assembly comprising:
(1) elongated inner and outer electrodes of tubular form disposed concentrically with respect to each other and arranged for connection across a source of high voltage,
(2) an elongated insulator member of dielectric material of tubular form disposed concentrically between the inner and outer electrodes and forming with one of said electrodes an elongated passageway therebetween communicating at one end with the air inlet end of the housing and at the opposite end with the ozone outlet end of the housing, and
(3) a multiplicity of spaced protrusions on the surface of one of the electrodes facing the other electrodes, forming a multiplicity of electrical discharge points between said electrodes.

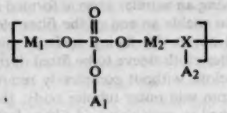
4,214,996

MINERAL ENRICHMENT COMPOSITION AND METHOD OF PREPARING SAME

Bruce D. Buddemeyer; William A. Neville; Nancy A. Rozzo, and Richard G. Bourne, all of Kansas City, Mo., assignors to R.G.B. Laboratories, Inc., Kansas City, Mo.

Filed Dec. 19, 1978, Ser. No. 970,935
Int. Cl.[2] A23L *1/30*
U.S. Cl. 252—1 19 Claims

1. A composition of matter which includes a moiety of the generalized formula



wherein M_1 and M_2 are polyvalent and respectively taken from the group consisting of calcium, magnesium, iron, copper, boron, manganese, molybdenum, nickel, and zinc,
A_1 and A_2 are respectively taken from the group consisting of hydrogen and the alkali metals, and
X is an organic acid moiety having at least three carboxyl groups therein.

10. A method of synthesizing metal-containing products having a high degree of dispersibility in aqueous media, comprising the steps of:
forming an admixture by admixing in an aqueous medium respective quantities of:
(1) a cation source selected from the group consisting of compounds of calcium, magnesium, iron, copper, boron, manganese, molybdenum, nickel, and zinc,
(2) an alkali metal phosphate source selected from the group consisting of alkali metal dihydrogen phosphate, dialkali metal phosphate, trialkali metal phosphate, and a mixture of an alkali metal source and phosphoric acid; and
(3) an organic acid having at least three carboxyl groups therein,
the molar ratios of said reactants being such that the ratio for phosphate ion to acid is from about 0.5:1 to 3:1; for alkali metal ions to phosphate ions, from about 1:1 to 6:1; for non-alkali metal cations to phosphate, from about 0.5:1 to 3:1; for non-alkali metal cations to acid, from about 1:1 to 5:1; and for alkali metal ions to acid, from about 0.5:1 to 7:1;
heating said admixture for a sufficient period of time and at a temperature to yield said products.

4,214,997

SOIL-RELEASE COMPOSITIONS

Ronald M. Morris, Wirral, and Stuart K. Pratley, Birkenhead, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,818
Claims priority, application United Kingdom, Oct. 26, 1977, 44580/77
Int. Cl.[2] C11D *3/26*; D06M *15/30*
U.S. Cl. 252—8.8 5 Claims

1. A soil-release composition comprising an aqueous solution of acid pH containing a dissolved complex of from 0.1 to 10% by weight of the composition of a water-soluble polycarboxylate polymer having at least 40% of carboxylic acid group by weight and whose units essentially have the structure —C(R)-(COX)CH_2—, where R is H, methyl or ethyl, X is OH, NH_2 or a C_1 to C_8 alkoxy group, and where X is OH in sufficient numbers of those units to make the polymer water-soluble and from 0.1 to 1.2 molar equivalents of a polyoxyalkylene nonionic detergent having an HLB of from 11 to 15 and contains an average of from 5 to 15 ethenoxy groups for each carboxylic acid group of the polymer, and sufficient of an insolubilising organic cationic quaternary ammonium surfactant compound to precipitate the complex when the aqueous solution is diluted with water at 20° C. of pH in the range from 6 to 8 to a 0.005% concentration of the polymer.

4,214,998

QUATERNARY AMMONIUM COMPOUNDS USEFUL AS FABRIC SOFTENING AGENTS

David R. Joy, Middlesbrough, England, assignor to Imperial Chemical Industries Limited, London, England

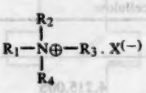
Filed Feb. 7, 1979, Ser. No. 10,597

Claims priority, application United Kingdom, Feb. 24, 1978, 7461/78

Int. Cl.[2] D06M *13/46*

U.S. Cl. 252—8.8 8 Claims

1. A composition comprising a mixture of quaternary ammonium compounds having the formula:



in which X represents a quaternary anion; R_1 and R_2, which may be the same or different within a molecule, are long chain alkyl groups containing from 13 to 15 carbon atoms in each group, the groups being both straight chain and branched, 65 to 75% C_{13} groups with 35 to 25% C_{15} groups, the percentages being calculated on the total of long chain alkyl groups, with 40 to 55 wt % straight chain and 60 to 45 wt % 2-alkyl branched chain where the 2-alkyl group is predominantly methyl; and R_3 and R_4, which may be the same or different within a molecule, are short chain alkyl groups containing one to four carbon atoms in each group.

4,214,999

SURFACTANT FLOODING OIL RECOVERY PROCESS

Joseph T. Carlin, Houston, Tex.; James W. Ware, Tulsa, Okla.; Melvin E. Mills, Jr., Salem, Ill., and Timothy N. Tyler, Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 746,642, Dec. 1, 1976, abandoned. This application Mar. 20, 1978, Ser. No. 888,444

Int. Cl.[2] E21B *43/22*

U.S. Cl. 252—8.55 D 3 Claims

1. A method of recovering petroleum from a subterranean petroleum-containing formation penetrated by at least one injection well and by at least one spaced apart production well, said wells being in fluid communication with the formation, comprising:

(a) injecting into the formation via the injection well an aqueous, saline fluid having a salinity greater than 20,000 parts per million total dissolved solids and containing a surfactant comprising petroleum sulfonates whose average equivalent weight is from 350 to 400, from 15 to 35 percent of said petroleum sulfonates having equivalent weights of 350 or less, from 30 to 50 percent of said petroleum sulfonates having equivalent weights greater than 350 and less than 500, and from 10 to 40 percent of said petroleum sulfonates having equivalent weights of 500 and above and a solubilizing co-surfactant selected from the group consisting of ethoxylated alkanols, ethoxylated alkylphenols, alkyl or alkylaryl polyethoxy sulfates, alkyl or alkylaryl polyalkoxyalkyl sulfonates, and mixtures thereof, said surfactant fluid displacing petroleum toward the production well; and

(b) recovering petroleum displaced by the surfactant fluids from the formation and via the production well.

4,215,000

DISSOLVING BARIUM SULFATE SCALE WITH AQUEOUS SOLUTIONS OF BICYCLIC MACROCYCLIC POLYETHERS AND ORGANIC ACID SALTS

Feike De Jong; David N. Reinhoudt, and Gerridina J. Torny-Schutte, all of Amsterdam, Netherlands, assignors to Shell Development Company, Houston, Tex.

Filed Oct. 16, 1978, Ser. No. 951,701

Claims priority, application United Kingdom, Apr. 20, 1978, 15674/78

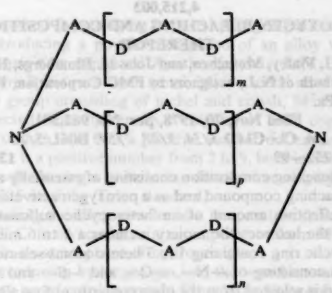
Int. Cl.[2] C09K *3/00*

U.S. Cl. 252—8.55 B 14 Claims

1. A process for dissolving barium sulphate solid from a remote location into which fluid can be flowed which process comprises:

flowing into said remote location and into contact with the barium sulphate an aqueous liquid consisting essentially of water, a bicyclic macrocyclic polyether, an alkali metal salt of a polycarboxylic organic acid in a proportion which is not more than that of said polyether but is sufficient to catalytically increase the rate at which barium sulphate is dissolved and enough dissolved alkaline inorganic alkali metal or ammonium material to provide a solution pH of at least about 8;

using as the bicyclic macrocyclic polyether a compound of the formula:



wherein (a) A represents a hydrocarbon radical having up to 12 carbon atoms and D represents a member of the group consisting of oxygen atoms, sulfur atoms, hydrocarbon radicals having up to 12 carbon atoms and $=N-R^2$ groups in which R^2 represents a hydrogen atom, hydrocarbon radical having up to 12 carbon atoms, a hydrocarbonsulfonyl radical having up to 12 carbon atoms, an alkoxycarbonyl radical having fewer than 5 carbon atoms, an alkoxycarbonyl-methylene radical having fewer than 5 carbon atoms or a carboxymethylene radical, (b) at least two of the D's represents a member of the group consisting of sulphur atom or $=N-R^2$ group, (c) m, n and p are integers from 0 to 5 inclusive, and (d) the bicyclic macrocyclic polyether contains an intramolecular cavity which is preferentially receptive to the cations of the alkaline earth metals.

4,215,001

METHODS OF TREATING SUBTERRANEAN WELL FORMATIONS

Eugene A. Elphingstone; Marvin D. Misak, and James E. Briscoe, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 871,725, Jan. 23, 1978, abandoned. This application Oct. 20, 1978, Ser. No. 953,287

Int. Cl.[2] E21B *43/27, 43/26*

U.S. Cl. 252—8.55 C 25 Claims

1. A method of fracturing a subterranean well formation comprising the steps of:

combining an aqueous solution of acid other than hydrofluoric acid with an aqueous alkali metal silicate solution having a pH of greater than about 11 in an amount sufficient to lower the pH of the resulting mixture to a level in the range of from about 7.5 to about 8.5 thereby forming a polymerized alkali metal silicate gel;

shearing said gel to thereby obtain a highly viscous thixotropic fracturing fluid; and

introducing said fracturing fluid into said subterranean formation at a flow rate and pressure sufficient to produce a fracture therein.

4,215,002

WATER-BASED PHOSPHONATE LUBRICANTS

Richard S. Fein, Poughkeepsie, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Jul. 31, 1978, Ser. No. 929,374
Int. Cl.[2] C10M *1/46*
U.S. Cl. 252—32.5 **3 Claims**

1. A water-based lubricating composition suitable for metal cutting, grinding, and forming operations and as a hydraulic fluid, comprising an emulsion containing from 0.5 to 4.0 percent of a C_6 to C_{18} alkylphosphonate or an amine adduct thereof and an ethoxylate of an acid or an alcohol containing from 3 to 20 ethoxy groups, balance water.

4,215,003

PEROXYGEN BLEACHING AND COMPOSITIONS THEREFOR

Joseph H. Finley, Metuchen, and John H. Blumbergs, Highland Park, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Nov. 20, 1978, Ser. No. 962,501
Int. Cl.[2] C11D *3/34, 3/28, 7/54*; D06L *5/20*
U.S. Cl. 252—99 **13 Claims**

7. A bleaching composition consisting of essentially a peroxygen bleaching compound and as a peroxygen activator therefor an effective amount of an heterocyclic sulfonate ester wherein the heterocyclic moiety includes a 5 to 6 membered heterocyclic ring containing 1 to 3 hetero atoms selected from the class consisting of —N—, —O— and —S— and the sulfonic acid is selected from the class consisting of an alkanesulfonic acid of 1 to 18 carbon atoms and an arenesulfonic acid of the benzene and naphthalene series.

8. The composition according to claim 7 wherein the peroxygen compound is sodium perborate tetrahydrate.

4,215,004

SLURRIED LAUNDRY DETERGENT

James F. Borgerding, and Robert T. Claus, both of Cincinnati, Ohio, assignors to Chemed Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 18,292, Mar. 6, 1979, abandoned. This application Mar. 28, 1979, Ser. No. 24,800
Int. Cl.[2] C11D *7/06*
U.S. Cl. 252—156 **3 Claims**

1. A slurry detergent consisting essentially of:

Components	Wt. %
Water	45.0–73
Water dispersible cross-linked interpolymer of a monomeric mixture consisting essentially of a monomeric polymerizable alpha-beta monoolefinically unsaturated lower aliphatic carboxylic acid, and a polyether of a polyol selected from the class consisting of oligo saccharides, reduced derivatives thereof in which the carbonyl group is converted to an alcohol group, and pentaerythritol, the hydroxyl groups of said polyol which are modified being etherified with allyl groups, said polyol having at least two allyl ether groups per polyol molecule	0.3–1.3
NaOH or KOH, dry basis	5.5–19.5
Non-ionic surfactant	2.0–8.0
Polyphosphate selected from the group consisting of alkali metal pyrophosphates, sodium hexametaphosphate, and sodium tripolyphosphate	0.0–20.0
Sodium polyacrylate, dry basis	0.2–2.0
Alkyl aryl sulfonic acid	0.5–4.0
Optical brightener	0.0–0.35
Sodium aluminosilicate	0.0–25.0
Sodium carboxymethylcellulose	0.0–1.5

4,215,005

ORGANIC STRIPPING COMPOSITIONS AND METHOD FOR USING SAME

John E. Vander Mey, Stirling, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 729,515, Oct. 4, 1976, Pat. No. 4,165,295. This application Jan. 30, 1978, Ser. No. 873,340
Int. Cl.[2] C11D *7/08, 7/32, 7/34, 7/50*
U.S. Cl. 252—153 **20 Claims**

1. In an improved organic stripping composition for removing polymeric organic substances from aluminized inorganic substrates comprising at least one organic sulfonic acid of the formula

$$R—SO_3H$$

wherein R is an organic radical selected from the group consisting of alkyl containing 1 to 18 carbon atoms, monohydroxyalkyl containing 1 to 18 carbon atoms, aryl containing 6 to 10 carbon atoms, monoalkylaryl wherein the alkyl group contains 1 to 14 carbon atoms, dialkylaryl wherein each alkyl group contains 1 to 4 carbon atoms, monohydroxyaryl containing 6 to 10 carbon atoms, monoalkyl-hydroxyaryl containing 7 to 11 carbon atoms and monochloro-hydroxyaryl containing 6 to 10 carbon atoms, and at least one organic solvent, the improvement which comprises incorporating a hydrogen fluoride complex comprising HF at about 5 to about 300 ppm by weight of fluoride per weight of composition and at least about 0.1 mols per mol of HF of an organic complexing agent having a nitrogen with an unshared electron pair selected from the group consisting of heterocyclic aromatic and heterocyclic saturated compounds containing a cyclic nitrogen with an unshared electron pair, N-substituted and unsubstituted amides and substituted and unsubstituted anilines.

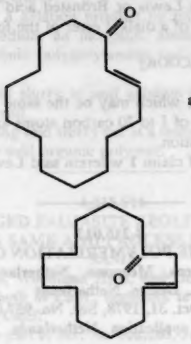
4,215,006

2-AND 3-CYCLOTETRADECEN-1-ONE TO AUGMENT OR ENHANCE THE AROMA OF SOLID OR LIQUID DETERGENTS

Braja D. Mookherjee, Holmdel; Robert W. Trenkle, Bricktown; Manfred H. Vock, Locust; Domenick Luccarelli, Jr., Ocean; Frederick L. Schmitt, Holmdel; Gilbert Stork, Englewood, all of N.J.; Timothy Macdonald, Nashville, Tenn., and Arthur L. Liberman, Highlands, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 973,093, Dec. 26, 1978, Pat. No. 4,183,965. This application Jun. 27, 1979, Ser. No. 52,830
Int. Cl.[2] C11D *3/50, 9/44*
U.S. Cl. 252—174.11 **4 Claims**

1. A process for augmenting or enhancing the aroma of a solid or liquid ionic, cationic or nonionic detergent consisting of the step of intimately admixing with a solid or liquid detergent base from 0.05% up to 5% of said detergent base of one or more 2- and 3-cyclotetradecen-1-ones having a structure selected from the group consisting of:



and

4,215,007

PROCESS FOR THE MANUFACTURE OF LOW-PHOSPHORUS OR PHOSPHORUS-FREE DETERGENTS CONTAINING ALUMINOSILICATES

Peter Krings, Krefeld; Josef Huppertz, Dusseldorf-Holthausen; Herbert Latka, Neuss; Gerhard Sperling, Hilden; Milan J. Schwuger, Haan, and Heinz Smolka, Langenfeld, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Continuation of Ser. No. 592,924, Jul. 3, 1975, abandoned. This application Oct. 3, 1978, Ser. No. 948,219

Claims priority, application Austria, Jul. 4, 1974, 5522/74

Int. Cl.[2] C02B *1/44;* C11D *3/12, 11/00, 11/02*

U.S. Cl. 252—174.25 8 Claims

1. A process for the manufacture of a low phosphorus or phosphorus-free spray dried detergent powder containing less than 6% by weight calculated as phosphorus, of phosphorus-containing compounds, from 5% to 30% by weight of at least one surface-active compound selected from the group consisting of anionic surface-active compounds, non-ionic surface-active compounds and zwitterionic surface-active compounds of which from 29.5% to 100% by weight of said surface-active compounds are nonionic surface-active compounds, from 15% to 90% by weight of water-soluble builder salts, from 0 to 50% by weight of other detergent powder additives, and from 5% to 50% by weight of at least one finely-dispersed water-insoluble silicate compound containing at least some combined water and having primary particles in the size range of from 100μ to 0.1μ and a calcium binding powder when measured at 22° C. by the Calcium Binding Power Test Method set out in the specification, of from 100 to 200 mg CaO/gm of anhydrous active substance and the formula on the anhydrous basis

$$(M_{2/n}O)_x.Me_2O_3.(SiO_2)_y$$

where M is a cation of the valence n, selected from the group consisting of sodium and potassium, x is a number from 0.7 to 1.5, Me is a member selected from the group consisting of aluminum and boron, and y is a number from 0.8 to 6, comprising the steps of spraying an aqueous slurry of at least 50% by weight of the total solids of the final spray dried detergent, of detergent ingredients, into a fall space while passing a large volume of air therethrough at an inlet temperature in excess of 150° C. and simultaneously injecting into said fall space, a powder comprising at least 25% by weight of the total amount of said silicate compound, at a rate in proportion to the rate of said spraying whereby the desired total solids ratio of ingredients in said spray dried detergent powder is maintained, and recovering said spray dried detergent powder.

4,215,008

RARE EARTH-CONTAINING ALLOYS AND METHOD FOR PURIFICATION OF HYDROGEN GAS THEREWITH

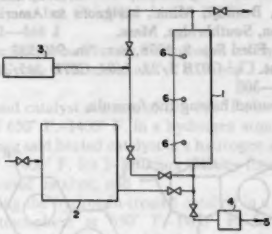
Zenzi Hagiwara, Kusatsu; Sigeo Matsui, Kobe; Susumu Sakaguchi, Yokohama, and Yoshio Yamanaka, Takefu, all of Japan, assignors to Shin-Etsu Chemical Co. Ltd., Tokyo and Osaka Oxygen Industries Ltd., Osaka, both of, Japan

Continuation of Ser. No. 688,422, May 20, 1976, abandoned. This application Jun. 27, 1978, Ser. No. 919,715

Claims priority, application Japan, May 26, 1975, 50/62621; May 28, 1975, 50/64674

Int. Cl.[2] B01D *15/08*

U.S. Cl. 252—184 1 Claim



1. A method for purifying impure hydrogen gas comprising

(a) introducing a powder composed of an alloy with the composition expressed by the formula $R(M_{1-x}{}^1M_x{}^2)_z$ where R is a rare earth metal, M^1 is a metal selected from the group consisting of nickel and cobalt, M^2 is a metal selected from the group consisting of iron, copper and chromium, x is 0 or a positive number not exceeding 0.5 and z is a positive number from 2 to 9, both inclusive, said powder having a particle size distribution ranging from 20 to 325 mesh by Tyler standard;

(b) heating the alloy powder at a temperature from 100° to 250° C. in a vacuum or at a temperature from 90° to 250° C. in an atmosphere of hydrogen gas;

(c) introducing hydrogen gas into the vessel containing the alloy powder to a pressure from 10 to 50 kg/cm^{2}G;

(d) evacuating or heating the vessel;

(e) introducing a quantity of impure hydrogen into the vessel to a hydrogen partial pressure of from 1 to 30 kg/cm^{2}G;

(f) purging the vessel of the impure hydrogen gas by means of a high purity hydrogen gas; and

(g) evacuating or heating the vessel so that hydrogen absorbed in the alloy is released and recovered as purified hydrogen gas.

4,215,009

PURIFICATION METHOD

Placido M. Spaziante, Lugano, Switzerland; Luigi Giuffre; Aldo Castoldi, both of Milan, Italy, and Giancarlo Sioli, Cernobbio, Italy, assignors to Oronzio deNora Impianti Elettrochimici S.p.A., Milan, Italy

Filed Sep. 7, 1978, Ser. No. 940,273

Claims priority, application Italy, Jun. 2, 1978, 24141 A/78

Int. Cl.[2] B01D *11/02, 17/00*

U.S. Cl. 252—184 19 Claims

1. A process for reducing metal ion concentration in aqueous alkali metal halide brines to a level below 0.2 mg/l comprising contacting an aqueous alkaline alkali metal halide brine having a pH of 10.5 to 12 and containing metal ion impurities with a water-immiscible organic solvent containing an effective amount of at least one complexing agent of the group consisting of 1-aryl-3-methyl-4-acylpyrazol-5-one wherein the acyl is derived from an organic carboxylic acid of 1 to 18 carbon atoms and a thenoyl-substituted keto compound and a complexing additive selected from the group consisting of trialkylphosphine oxides and trialkylphosphates.

11. A composition for reducing metal ion content of aqueous alkaline solutions comprising a solution of an water-immiscible organic solvent containing (a) 0.1 to 0.001 M of at least one complexing agent of the group consisting of 1-aryl-3-methyl-acyl-pyrazol-5-one wherein the acyl is derived from an organic carboxylic acid of 1 to 18 carbon atoms and a thenoyl-substituted keto compound and (b) 0.1 to 5% by volume of a complexing additive selected from the group consisting of trialkyl phosphine oxides and trialkylphosphates.

4,215,010

PHOTOCHROMIC COMPOUNDS

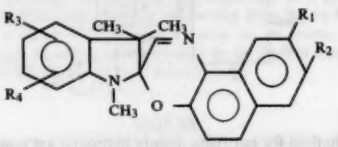
Richard J. Hovey, Sturbridge; Nori Y. C. Chu, Southbridge; Peter G. Piusz, Longmeadow, all of Mass., and Charles H. Fuchsman, Bemidji, Minn., assignors to American Optical Corporation, Southbridge, Mass.

Filed Sep. 8, 1978, Ser. No. 940,535

Int. Cl.[2] G02B 5/23, 1/04; C07D 265/38

U.S. Cl. 252—300 **14 Claims**

1. A compound having the formula;



wherein one of R_1 and R_2 is halogen or lower alkoxy, and the other is hydrogen, and R_3 and R_4 are hydrogen, lower alkyl, lower alkoxy, or halogen.

10. A photochromic optical element comprising, (A) a transparent plastic host and (B) an effective amount of photochromic compound selected from the group consisting of 1,3,3-trimethyl-9′-methoxy-; 1,3,3-trimethyl-9′-ethoxy-; 1,3,3-trimethyl-8′-bromo-; 1,3,3,5-tetramethyl-9′-methoxy-; 1,3,3,6-tetramethyl-9′-methoxy-; 1,3,3,7-tetramethyl-9′-methoxy-; 1,3,3,4,5-pentamethyl-9′-methoxy; 1,3,3,5,6-pentamethyl-9′-methoxy-; 1,3,3,4,7-pentamethyl-9′-methoxy-; 1,3,3,5,7-pentamethyl-9′-methoxy-; 1,3,3,6,7-pentamethyl-9′-methoxy-; 1,3,3-trimethyl-5,9′-dimethoxy-; 1,3,3-trimethyl-4,7,9′-trimethoxy-; 1,3,3-trimethyl-5-chloro-9′-methoxy-; 1,3,3,4,5-pentamethyl-8′-bromo-; 1,3,3,5,6-pentamethyl-8′-bromo-spiroindolinenaphthooxines and mixtures thereof.

4,215,011

CATALYST SYSTEM FOR SEPARATING ISOBUTENE FROM C_4 STREAMS

Lawrence A. Smith, Jr., Houston, Tex., assignor to Chemical Research and Licensing Company, Houston, Tex.

Continuation-in-part of Ser. No. 928,397, Jul. 27, 1978. This application Feb. 21, 1979, Ser. No. 13,730

Int. Cl.[2] B01J 31/08, 35/02

U.S. Cl. 252—426 **7 Claims**

1. A catalyst system for use in a reaction-distillation column comprising a plurality of closed cloth pockets containing a particulate catalytic material, arranged and supported in said reaction-distillation column by wire mesh intimately associated with said closed cloth pockets.

4,215,012

CATALYST FOR INCREASING THE TENSILE STRENGTH AND CORE HARDNESS OF A SAND MOLD OR CORE

Khe-Bing J. Kho, and Patrick H. Stewart, both of Danville, Ill., assignors to C L Industries, Inc., Danville, Ill.

Division of Ser. No. 809,546, Jun. 23, 1977. This application Mar. 28, 1978, Ser. No. 891,137

Int. Cl.[2] C08G 2/06; C08K 5/11

U.S. Cl. 252—429 R **6 Claims**

1. A sulfur-free catalyst composition for the polymerization of a thermosetting acid hardenable resin, said catalyst consisting essentially of a Lewis or Brönsted acid and 3–50% wt., based on said acid, of a dialkyl ester of the formula:

$$R_1OOC(CH_2)_nCOOR_2$$

wherein R_1 and R_2, which may be the same or different, are selected from alkyl of 1 to 20 carbon atoms and n is 2, 3 or 4, undiluted or in solution.

3. The catalyst of claim 1 wherein said Lewis acid is ferric chloride.

4,215,013

PROCESS FOR THE POLYMERIZATION OF 1-ALKENES

Jacobus A. Loontjens, Meerssen, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Oct. 31, 1978, Ser. No. 957,003

Claims priority, application Netherlands, Nov. 1, 1977, 7711974

Int. Cl.[2] C08F 4/02, 4/64

U.S. Cl. 252—429 B **14 Claims**

1. An improved catalyst system for the polymerization and copolymerization of 1-alkenes which contains a titanium halogenide component supported on a magnesium halogenide material and an organoaluminum component containing a complex of an organic aluminum compound with an ester of a carboxylic organic acid, and wherein the magnesium halogenide has at most about 0.2% H_2O by weight and at most about 0.1 mgeq magnesium oxide per g of magnesium halogenide, and which has been prepared by heating a magnesium halogenide containing water and/or magnesium oxide in a gaseous flow of a carbon halogenide vapor and/or of a mixture of carbon monoxide and a halogen.

4,215,014

$T_nMR'_{-n}$ COCATALYSTS

Arthur W. Langer, Jr., Watchung, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 890,324, Mar. 28, 1979, abandoned. This application Jun. 18, 1979, Ser. No. 49,086

Int. Cl.[2] C08F 4/64

U.S. Cl. 252—429 B **15 Claims**

1. An improved catalyst composition which comprises a mixture of:

(a) a Group IVB to VIII transition metal halide;

(b) at least one alkyl metal cocatalyst having the formula $TnMR'_{3-n}$ wherein n=1 or 2, T is R_3DCH_2, D being selected from the group consisting of Si, Ge and Sn, M being selected from the group consisting of Al, Ga and In, R being a methyl or ethyl group and R′ is selected from the group consisting of C_1–C_8 primary alkyl or aralkyl groups including unhindered branched groups, a molar ratio of said alkyl metal cocatalyst to said transition metal halide being about 0.5:1 to about 50:1; and

(c) at least one Lewis base in sufficient amounts, said Lewis base does not cause excessive cleavage of metal-carbon bonds or loss of active sites.

4,215,015

HIGH OCTANE FCC CATALYST

Hosheng Tu, Shorewood, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Feb. 2, 1979, Ser. No. 8,823

Int. Cl.[2] B01J 37/02, 29/08

U.S. Cl. 252—453 **14 Claims**

1. A catalytic composite comprising a zeolitic crystalline aluminosilicate dispersed in a silica-alumina matrix and having pore sizes in the intermediate range of about 100 to about 275 Angstroms in diameter, said composite having been manufactured by:

(a) dispersing a zeolitic crystalline aluminosilicate in water to prepare a slurry;
(b) preparing a gelation product by mixing together in an aqueous medium an inorganic aluminum salt, a water soluble anionic polyacrylamide and an alkali-metal silicate;
(c) adding said slurry to said gelation product to obtain a slurry gel; and
(d) spray drying said slurry gel at a temperature sufficient to decompose said organic polymer.

4,215,016

EXCHANGED FAUJASITE ZEOLITE CATALYST CONTAINING SAME AND PROCESS FOR PRODUCING SAME

Hamid Alafandi, Woodland Hills, and Dennis Stamires, Newport Beach, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 808,268, Jun. 20, 1977, Pat. No. 4,164,483, which is a continuation-in-part of Ser. No. 718,166, Aug. 27, 1976, Pat. No. 4 ,085,069, and a continuation-in-part of Ser. No. 718,167, Sep. 8, 1976, Pat. No. 4,058,484. This application Feb. 3, 1978, Ser. No. 874,754

Int. Cl.[2] B01J *29/04, 29/08*

U.S. Cl. 252—455 Z **8 Claims**

1. A method of producing an exchanged zeolite of the faujasite type which comprises mixing a sodium zeolite of the faujasite type with a solution of a salt of a member of the group consisting of ammonium and the metals of the groups 1b, 2a, 2b, 3a, 6b, and 7b, of the periodic system, and two or more thereof, the quantity of the zeolite, and the concentration of the cations, being in quantity sufficient to establish a ratio of the equivalents of cation in the solution at super atmospheric pressure, per equivalent of Na cation in the zeolite in the mixture in excess of about 1, heating the solution to a temperature in the range of about 300° F. and up but less than about 500° F. for a period of time to reduce the sodium content of the zeolite, expressed as Na_2O, to less than about 0.1 equivalents per gram atom of Al in the exchanged zeolite, and washing the zeolite substantially free of anions of the salt in solution.

4,215,017

CATALYST FOR DISPROPORTIONATION/DOUBLE-BOND ISOMERIZATION OF OLEFINS

Robert E. Reusser, and William B. Hughes, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 878,537, Feb. 16, 1978, Pat. No. 4,180,524. This application Dec. 28, 1978, Ser. No. 973,980

Int. Cl.[2] B01J *29/00, 23/13, 23/84*

U.S. Cl. 252—458 **18 Claims**

1. An activated calcined homogenous catalyst composition consisting essentially of a support/uranium/and at least one of tungsten and rhenium, wherein said composition contains about 0.1 to 25 weight percent total uranium, tungsten, and rhenium, each calculated as the metal; and a weight ratio of uranium:at least one of tungsten and rhenium of about 2:1 to 0.1:1; and wherein said activated catalyst composition is prepared by steps which comprise forming a homogenous composite, calcining said homogenous composite in a molecular oxygen-containing atmosphere at elevated temperatures, and subsequently activating said calcined homogenous composite under reducing conditions at elevated temperatures.

2. The catalyst composition according to claim 1 wherein said total of uranium, tungsten, and rhenium is about 1 to 15 weight percent.

3. The catalyst composition according to claim 2 wherein said ratio of uranium:at least one of tungsten and rhenium is about 2:1 to 0.5:1.

4. The catalyst composition according to claim 3 wherein said support is alumina, silica, silica-alumina, zirconia, titania, thoria, aluminum phosphate magnesium silicate, zinc aluminate, or mixture.

5. The catalyst composition according to claim 4 wherein said support is silica.

4,215,018

STEAM DEALKYLATION CATALYST AND A METHOD FOR ITS ACTIVATION

Tansukhlal G. Dorawala, Wappingers Falls, and Russell R. Reinhard, Hopewell Junction, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 850,120, Nov. 10, 1977, Pat. No. 4,136,129, which is a continuation of Ser. No. 610,806, Sep. 5, 1975, abandoned. This application Sep. 5, 1978, Ser. No. 939,512

Int. Cl.[2] B01J *21/04, 23/78*

U.S. Cl. 252—466 J **12 Claims**

1. The method of activating a supported catalyst containing oxides of a Group VIII metal and of a Group I A metal which comprises

heating said catalyst at a rate of 10°–500° F./hr to a temperature of 650° F.–1400° F. in a hydrogen atmosphere;

maintaining said heated catalyst in a hydrogen atmosphere at 650° F.–1400° F. for 2–30 hours thereby forming a hydrogen-treated catalyst; and

maintaining the hydrogen-treated catalyst in a steam-hydrogen atmosphere at 650° F.–1400° F. for 2–20 hours thereby forming a steamed hydrogen-treated catalyst.

4,215,019

RUTHENIUM-COBALT-GOLD CATALYST FOR HYDROGENATION OF UNSATURATED DINITRILES

Charles A. Drake, and Timothy P. Murtha, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 14, 1978, Ser. No. 960,798

Int. Cl.[2] B01J *21/04, 23/46, 23/52, 23/74*

U.S. Cl. 252—466 B **6 Claims**

1. A catalyst suited for hydrogenation of compounds essentially comprising ruthenium, cobalt and gold.

4,215,020

ELECTRICAL RESISTOR MATERIAL, RESISTOR MADE THEREFROM AND METHOD OF MAKING THE SAME

Richard L. Wahlers, Churchville, and Kenneth M. Merz, Gladwyne, both of Pa., assignors to TRW Inc., Cleveland, Ohio

Filed Apr. 3, 1978, Ser. No. 892,693

Int. Cl.[2] H01B *1/06*

U.S. Cl. 252—519 **42 Claims**

1. A vitreous enamel resistor material comprising a mixture of glass frit, and finely divided particles of tin oxide and of an additive, said additive being selected from the group consisting of the oxides of manganese, nickel, cobalt and zinc, the particles of tin oxide and the additive being present in an amount of 20 to 90% by volume, and the additive being present in an amount of about 0.07 to 18.5% by volume.

4,215,021

COATING RUBBER COMPOSITION FOR TIRE CORDS

Masaki Ogawa, Sayama; Tamio Araki, Masashino, and Shinji Yamamoto, Ichihara, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo and Ube Industries, Ltd., Ube, both of, Japan

Filed Apr. 5, 1979, Ser. No. 27,415

Claims priority, application Japan, Apr. 6, 1978, 53-39679

Int. Cl.[2] C08K *5/00;* **C09L** *7/00*

U.S. Cl. 260—5 **4 Claims**

1. A coating rubber composition for tire cords, obtained by an unvulcanized rubber composition comprising 3–40 parts by weight of short fibers of syndiotactic-1,2-polybutadiene having a maximum diameter of not more than 10μ and an average diameter of less than 1μ and 30–120 parts by weight of carbon

black, on a basis of 100 parts by weight of a rubber selected from natural rubbers, synthetic rubbers and blends thereof in an optional blending ratio; said composition having a swelling value of not more than 140% in the extrusion at 100° C.

4,215,022

ISOBUTYLENE CYCLODIOLEFIN COPOLYMERS AND TERPOLYMERS

Donald J. Buckley, Plainfield; Warren A. Thaler, Matawan, both of N.J., and Joseph P. Kennedy, Akron, Ohio, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 803,596, Jun. 6, 1977, which is a continuation-in-part of Ser. No. 631,444, Nov. 13, 1975, Pat. No. 4,031,300, which is a continuation-in-part of Ser. No. 457,109, Apr. 1, 1975, Pat. No. 3,928,297, which is a continuation-in-part of Ser. No. 151,108, Jun. 8, 1971, Pat. No. 3,808,177. This application Oct. 16, 1978, Ser. No. 952,241

Int. Cl.[2] C08F *8/34*

U.S. Cl. 260—5 **27 Claims**

1. A vulcanizable composition which comprises:

(a) a substantially gel free copolymer consisting of a major portion of an isoolefin having about 4 to about 10 carbon atoms and about 8 to about 45 mole % of one cyclic conjugated diene of about 5 to about 9 carbon atoms, wherein said cyclic conjugated diene is selected from the group consisting of cyclopendadiene and methylcyclopentadiene, said copolymer having an Mn of about 30,000 to less than 90,000;

(b) a vulcanizing amount of sulfur donor; and

(c) a delayed action accelerator.

4,215,023

URETHANE ENAMEL COATING COMPOSITION

Clifford H. Strolle, Springfield, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 13, 1978, Ser. No. 960,014

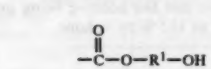
Int. Cl.[2] C08L *91/00*

U.S. Cl. 260—22 CB **13 Claims**

1. A curable coating composition comprising 10–70% by volume of a polymer blend and a solvent for the polymer blend wherein the polymer blend consists essentially of:

(a) 15–50% by weight, based on the weight of the blend, of an organic polyisocyanate;

(b) 10–70% by weight, based on the weight of the blend, of a polymer having a backbone of (i) polymerized ethylenically unsaturated monomers and (ii) polymerized ethylenically unsaturated ester units that form ester groups, attached to the backbone, of the formula



wherein R^1 is a saturated hydrocarbon radical having 2–10 carbon atoms and wherein the primary-hydroxyl content of the polymer is 0.5–4.4% by weight, based on the polymer, and;

(c) 15–40% by weight, based on the weight of the blend, of an alkyd resin plasticizer which is the reaction product of a glyceride of a saturated fatty acid, a dihydric alcohol, and a derivative of a dicarboxylic acid selected from the group consisting of anhydrides, dialkyl esters, and mixtures of these, wherein the reaction product has a primary-hydroxyl content of 1.0–4.4% by weight, based on the reaction product, and

wherein the coating composition is curable at ambient temperatures.

4,215,024

MOLDING COMPOSITIONS AND PROCESS FOR PREPARING SAME

I. Luis Gomez, Longmeadow, and Edward F. Tokas, West Hatfield, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 2, 1978, Ser. No. 957,301

Int. Cl.[2] C08L *91/00*

U.S. Cl. 260—23 S **12 Claims**

1. A molding composition comprising a blend of a nitrile polymer containing at least about 10 weight percent based on total polymer weight of polymerized acrylonitrile and about 0.005 to about 2% by weight based on the weight of the polymer of an unsaturated fatty acid compound, said blend being free of rubber containing impact modifiers.

4,215,025

WATER SOLUBLE ADHESIVE COATING FOR MOUNTING COMPONENTS TO PRINTED WIRING BOARDS

Marvin Packer, Broomall, Pa., and Otis D. Black, Willingboro, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 27, 1977, Ser. No. 864,624

Int. Cl.[2] C08L *23/26, 61/26, 79/04*

U.S. Cl. 260—29.2 R **11 Claims**

1. A sprayable, non-flowing water soluble composition comprising 100 parts by weight of a water soluble polymeric compound(s) which can be dissolved in water to give greater than about a 45% by weight solids content and a viscosity range of about 8 to about 12 poises at about 25° C., about 10 to about 40 parts by weight of a water soluble mono-, di- or polyhydric alcohol, about 10 to about 40 parts by weight of water, about 1 to about 4 parts by weight of a wetting agent, and about 0.01 to about 6 parts by weight of a water soluble organic acid having a keto oxygen group within 4 carbon atoms of the carboxylic acid group.

4,215,026

AQUEOUS DISPERSION OF A BRANCHED POLYESTER

Robert B. Login, Woodhaven, Mich., assignor to BASF Wyandotte Corp., Wyandotte, Mich.

Division of Ser. No. 891,209, Mar. 29, 1978, Pat. No. 4,158,083, which is a division of Ser. No. 702,043, Jul. 15, 1976, abandoned. This application Jan. 2, 1979, Ser. No. 129

Int. Cl.[2] C08G *63/12*; C08L *67/00*; D02G *3/00*

U.S. Cl. 260—292 E **6 Claims**

1. An aqueous dispersion of a branched water-dispersible polyester comprising water and the polycondensation reaction product of:

(a) at least one polycarboxylic acid, anhydride or ester thereof,

(b) at least one diol or polyglycol, and

(c) an organic reactant,

wherein said polyester is a branched water-dispersible polyester containing repeating carbonyl-oxy units wherein said units are an integral part of the polymer chain, said organic reactant containing an alkali metal salt of a sulfonic acid attached to an aromatic nucleus through an aliphatic or cycloaliphatic chain and ester linkage which is capable of rendering said polyester water-dispersible and which is present in the proportions of from about 5 mole percent to about 50 mole percent, based upon the sum of the theoretical mole percentages of the other carboxylic acid components of said polyester, wherein said organic reactant consists of the at least monofunctional reaction product of an aromatic polycarboxylic acid anhydride and an aliphatic or cycloaliphatic hydrocarbon hydroxysulfonic acid alkali metal salt.

4,215,027

AQUEOUS THERMOSETTABLE COATING COMPOSITIONS COMPRISING AQUEOUS COPOLYMER LATEX, AMINE NEUTRALIZED COPOLYMER AND MELAMINE-FORMALDEHYDE RESIN

Robert L. Heppolette, Islington, Canada; Hamid I. Khan, Rawalpindi, Pakistan, and Ian H. McEwan, Kleinburg, Canada, assignors to Canadian Industries Limited, Montreal, Canada

Continuation of Ser. No. 593,242, Jul. 7, 1975, abandoned. This application Sep. 7, 1977, Ser. No. 831,292

Claims priority, application United Kingdom, Jul. 16, 1974, 31427/74

Int. Cl.[2] C08L *61/28*

U.S. Cl. 260—29.4 UA **20 Claims**

1. An aqueous thermosetting coating composition, the polymeric binder of which comprises a blend having a pH in the range of from about 6–9 of

(1) from about 40 parts to about 90 parts by weight of a latex of a copolymer made by emulsion polymerization techniques and having a reduced viscosity in the range of from about 0.2 to about 0.8 dl/g measured at 25° C. in ethylene dichloride/ethanol (95/5) at 0.5 g copolymer per 100 ml solvent, the copolymer comprising from about 93% to about 75% by weight, based on the total weight of copolymer, of one or more main monomers selected from the group consisting of styrene, α-methyl styrene, alkyl acrylates, alkyl methacrylates, alkyl itaconates, alkyl maleates and alkyl fumarates wherein the alkyl group contains from 1 to 12 carbon atoms, from about 7% to about 25% by weight, based on the total weight of copolymer of reactive monomers, the reactive monomers comprising from about 5% to about 15% by weight, based on the total weight of copolymer of a hydroxy-alkyl acrylate or hydroxyalkyl methacrylate, wherein the alkyl group contains from 2 to 4 carbon atoms and from about 2% to about 10% by weight, based on the total weight of copolymer, of an α,β-ethylenically unsaturated carboxylic acid;

(2) from about 5 parts to about 40 parts by weight of a dissolved, compatible amine-neutralized copolymer having a reduced viscosity in the range of from about 0.12 to about 0.50 dl/g measured at 25° C. in ethylene dichloride/ethanol (95/5) at 0.5 g. copolymer per 100 ml solvent, the copolymer comprising from about 5% to about 25% by weight, based on the total weight of copolymer, of a hydroxyalkyl acrylate or hydroxyalkyl methacrylate, wherein the alkyl group contains from 2 to 4 carbon atoms, from about 2% to about 15% by weight based on the total weight of copolymer, of an α,β-ethylenically unsaturated carboxylic acid; and from about 93% to about 60% by weight, based on the total weight of copolymer, of one or more monomers selected from the group consisting of styrene, alkyl acrylates, alkyl methacrylates, alkyl itaconates, alkyl maleates, and alkyl fumarates, wherein the alkyl group contains from 1 to 12 carbon atoms; and

(3) from about 8 parts to about 40 parts by weight of a water soluble or water dispersible melamine-formaldehyde resin; with the sum of components (1), (2) and (3) totaling 100 parts by weight.

4,215,028

THERMOSETTING RESIN, AND ITS PRODUCTION AND USE

Ryuzo Mizuguchi, Tondabayashi; Atushi Takahashi, Kyoto; Shinichi Ishikura, Takatsuki, and Akimitsu Uenaka, Suita, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

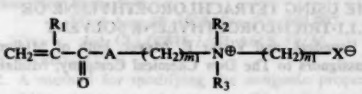
Continuation-in-part of Ser. No. 722,330, Sep. 10, 1976, abandoned. This application Jul. 24, 1978, Ser. No. 927,038

Claims priority, application Japan, Jun. 24, 1976, 51-75102

Int. Cl.[2] C08F *220/04, 220/06*

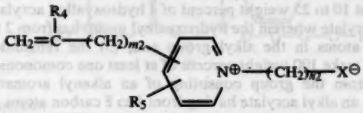
U.S. Cl. 260—29.6 TA **6 Claims**

1. A process for preparing a thermosettable resin of self cross-linking type, which comprises polymerizing (1) 0.5 to 30% by weight of at least one polymerizable monomer having an ionic structure selected from the group consisting of (i) a compound of the formula:



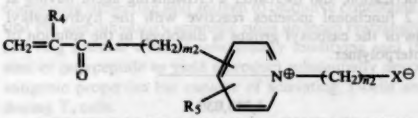
[I]

wherein R_1 is hydrogen or methyl, R_2 and R_3 are each C_1–C_6 alkyl, A is —O— or —NH—, m_1 and n_1 are each an integer of 1 to 12 and $X^{\ominus}$ is $SO_3^{\ominus}$, $SO_4^{\ominus}$ or $CO_2^{\ominus}$, (ii) a compound of the formula:



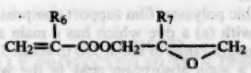
(II)

and (iii) a compound of the formula:



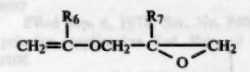
(III)

wherein, the formulae (II) and (III), R_4 is hydrogen or methyl, R_5 is hydrogen or C_1–C_3 alkyl, m_2 is zero or an integer of 1 to 6, n_2 is an integer of 1 to 6 and A and $X^{\ominus}$ are each as defined above, (2) 1 to 25% by weight of at least one polymerizable monomer containing an oxirane group selected from the group consisting of a compound of the formula:



(IV)

and a compound of the formula:



(V)

wherein, in formulae (IV) and (V), R_6 and R_7 are each hydrogen or methyl, and (3) 45 to 98.5% by weight of at least one ethylenically unsaturated polymerizable monomer other than said polymerizable monomer having an ionic structure and said polymerizable monomer containing an oxirane group, said polymerization being carried out in the presence of 0.05 to 5% by weight of a polymerization initiator, based on the total weight of the monomers to be polymerized, with the proviso that the polymerizable monomer component (3) includes a carboxyl group-containing polymerizable monomer selected from the group consisting of acrylic acid, methacrylic acid, maleic acid, a monoester of maleic acid, itaconic acid, a monoester of itaconic acid, fumaric acid and a monoester of fumaric acid, of which the amount is from 2 to 20% by weight based on the total weight of the monomers to be polymerized

said thermosettable resin of self cross-linking type having a property such that if an aqueous dispersion of said resin in a concentration of 50% by weight is applied to a tin plate and dried to obtain a film having a thickness of 10 to 15μ, and said film is baked at 160° C. for 10 minutes to obtain a hardened film, said hardened film will have an acetone-insoluble solid content of not less than 50% by weight.

4,215,029
CROSSLINKABLE POLYMER COATING COMPOSITIONS AND PROCESS FOR PREPARING THE SAME USING TETRACHLOROETHYLENE OR 1,1,1-TRICHLOROETHYLENE SOLVENT

Frank L. Saunders, and Victor E. Meyer, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 2, 1978, Ser. No. 956,952
Int. Cl.[2] C08K 5/02
U.S. Cl. 260—33.8 UA **8 Claims**

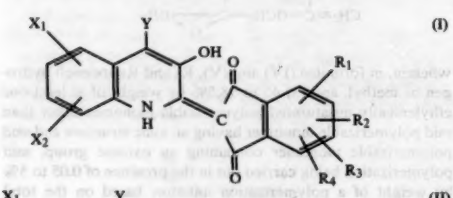
1. In the process for preparing a lacquer from crosslinkable polymers, the improvement wherein a monomer composition consisting essentially of (1) from about 1 to 15 weight percent of an alpha,beta-olefinically unsaturated carboxylic acid; (2) from about 10 to 25 weight percent of a hydroxyalkyl acrylate or methacrylate wherein the hydroxyalkyl group has from 2 to 4 carbon atoms in the alkyl group and; (3) the remainder needed to make 100 weight percent of at least one comonomer selected from the group consisting of an alkenyl aromatic monomer, an alkyl acrylate having from 1 to 8 carbon atoms in the alkyl group and mixtures thereof, is dissolved in tetrachloroethylene, 1,1,1-trichloroethane or mixtures thereof and subjected to thermal and catalytic inducement of free radical polymerization, and thereafter a crosslinking agent having at least 2 functional moieties reactive with the hydroxyalkyl groups or the carboxyl groups is dissolved in the solution of the interpolymer.

4,215,030
PHOTOGRAPHIC POLYESTER FILM SUPPORT

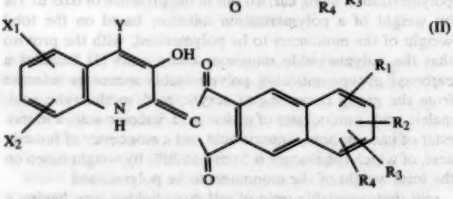
Tsutomu Okita; Masami Satou; Noburo Hibino, all of Fujinomiya; Kazunobu Katoh, Minami-ashigara, and Hiroshi Sawaguchi, Odawara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 30, 1978, Ser. No. 938,162
Claims priority, application Japan, Aug. 31, 1977, 52-104401
Int. Cl.[2] C08K 5/08, 5/34
U.S. Cl. 260—40 R **10 Claims**

1. A photographic polyester film support comprising a polyester dope-dyed with (a) a dye which has a main absorption peak in the wavelength range of about 530 to about 570 nm, (b) a dye which has a main absorption peak in the wavelength range of about 640 to about 680 nm and (c) a dye which has a main absorption peak in the wavelength range of about 420 to about 460 nm and represented by the following formula (I) or (II):



(I)



(II)

wherein R_1, R_2, R_3 and R_4, which may be the same or different, each represents —H, —OH, $—NH_2$, —NHR_5, —NR_5R_6, —Cl, —Br, an alkyl group having 4 or less carbon atoms or an alkoxy group having 4 or less carbon atoms; R_5 and R_6, which may be the same or different, each represents an alkyl group having 4 or less carbon atoms or an aryl group; X_1 and X_2, which may be the same or different, each represents —H, —Cl, —Br or an alkyl group having 4 or less carbon atoms; and Y represents —H, —Cl or —Br, with the proviso that R_1, R_2, R_3 and R_4 in the formula (I) are not simultaneously —H.

4,215,031
THICKENING ADDITIVES FOR UNSATURATED POLYESTER RESINS

Charles C. Payne, Chicago, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Feb. 14, 1979, Ser. No. 11,838
Int. Cl.[2] C08K 9/04
U.S. Cl. 260—40 R **5 Claims**

1. An unsaturated polyester resin which contains at least 0.3% by weight of silica particles having an ultimate particle size within the range of 4–70 millimicrons, which particles have their surface coated with a quaternary ammonium salt which contains at least 1 organic radical of at least 6 carbon atoms in chain length.

4,215,032
POLYESTER COMPOSITION

Shigeo Kobayashi; Nori Yoshihara; Kiyoji Nanbu, and Yukio Goto, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

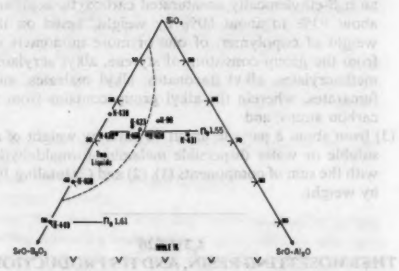
Filed May 9, 1979, Ser. No. 37,334
Claims priority, application Japan, May 18, 1978, 53-59646
Int. Cl.[2] C08L 67/02
U.S. Cl. 260—40 R **16 Claims**

1. A polyester composition composed of solid polyethylene terephthalate or a solid polyester containing at least 80 mol % ethylene terephthalate repeating units and 0.1 to 15 weight %, based on the polyester, of an organic crystallization promoting agent added thereto having a polyoxyalkylene chain and at least one epoxy group.

4,215,033
COMPOSITE DENTAL MATERIAL

Rafael L. Bowen, Gaithersburg, Md., assignor to American Dental Association Health Foundation, Washington, D.C.

Continuation of Ser. No. 764,448, Jan. 31, 1977, abandoned. This application Sep. 8, 1978, Ser. No. 940,597
Int. Cl.[2] A61K 5/06; C03C 15/00; C08K 3/40; C08L 33/12
U.S. Cl. 260—42.15 **22 Claims**



1. In a dental resin composite comprising a resin and a nontoxic filler, the improvement which comprises employment of a filler comprising a substantially transparent inorganic glass material which is a two-phase vitreous mixture of silicon dioxide (SiO_2), boron oxide (B_2O_3), aluminum oxide (Al_2O_3) and at least one oxide selected from the group consisting of strontium oxide (SrO), calcium oxide (CaO) and zinc oxide (ZnO), and which is substantially free of monovalent elements, wherein the refractive indexes of the phases are within the range of 1.45 to 1.75; wherein the morphologies of the phases are two con-

tinuous, interpenetrating networks of submicroscopic dimension which interlock and twist one phase through the other; and wherein one of the phases is partially removed at the surface to define pores.

19. Substantially transparent glass particles less than 5.0 millimeters in diameter consisting essentially of 51.4 mole % silicon oxide (SiO_2), 15.2 mole % boron oxide (B_2O_3), 9.1 mole % aluminum oxide (Al_2O_3) and 24.3 mole % calcium oxide (CaO), said particles having as a morphology a two phase interpenetrating, twisting and interlocking network of submicroscopic dimension, with the low silica phase etched to a depth of less than 10,000 Angstroms, and suitable for use in a dental composite.

4,215,034

FLAME RETARDANT POLYMERIC COMPOSITIONS CONTAINING HALOGENATED DIELS-ALDER ADDUCTS WITH FURAN

Harry W. Marciniak, Tonawanda; Richard D. Carlson, Grand Island, both of N.Y., and James L. Dever, Brunswick, Ohio, assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 190,271, Oct. 18, 1971, Pat. No. 3,991,011, which is a continuation-in-part of Ser. No. 157,627, Jun. 28, 1971, abandoned, which is a continuation of Ser. No. 847,430, Aug. 4, 1969, abandoned. This application Nov. 8, 1976, Ser. No. 739,875

The portion of the term of this patent subsequent to Nov. 9, 1993, has been disclaimed.

Int. Cl.[2] C08K *5/15*

U.S. Cl. 260—45.8 A **7 Claims**

1. A fire retardant polymeric composition comprising a thermoplastic elastomer selected from the group consisting of a polyurethane, a co-polyester elastomer, a polyisobutylene elastomer, and an effective fire retardant proportion of a compound of the formula:

wherein X is selected from the group consisting of fluorine, chlorine, and bromine, Y is selected from the group consisting of fluorine, chlorine, bromine, alkyl, haloalkyl, alkoxy and haloalkoxy and each R is individually selected from the group consisting of hydrogen and alkyl.

4,215,035

THERMALLY STABLE SULFUR DIOXIDE-ETHYLENE-VINYL ESTER TERPOLYMERS AND PROCESS FOR PREPARING SAME

Leroy J. Memering, and Lorrin W. Pyle, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Apr. 11, 1979, Ser. No. 28,958

Int. Cl.[2] C08K *5/36, 3/34, 3/26, 3/24*

U.S. Cl. 260—45.75 W **20 Claims**

1. A sulfur dioxide-ethylene-vinyl ester terpolymer having improved thermal stability observed as a reduction in the level of malador of the terpolymer and/or an improvement in the color stability of the terpolymer, said terpolymer containing substantially uniformly distributed therein a thermal stability imparting amount of at least one inorganic oxygen-containing metal compound in which the metal is an alkali metal, alkaline earth metal or zinc.

4,215,036

MODIFIED GRASS POLLEN ANTIGENS

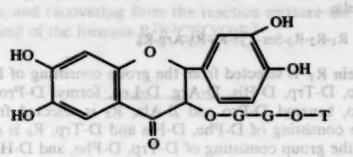
Arthur Malley, Beaverton, Oreg., assignor to Research Corporation, New York, N.Y.

Filed Aug. 15, 1978, Ser. No. 933,907

Int. Cl.[2] C08H *1/00*; A61K *39/36*

U.S. Cl. 260—112 R **12 Claims**

1. A method for modifying the antigenic properties of a quercitin moiety containing grass pollen antigen or fragment thereof having the structure:



wherein:

G represents glucose, and

T represents threonine or a poly-peptide linked to said structure through a threonine molecule;

comprising subjecting said antigen to oxidative conditions such that the said dihydroxy aromatic rings undergo rearrangement and ring scission without substantially modifying said threonine or polypeptide to yield a product substantially devoid of antigenic properties but capable of activating T-cells and inducing T_s cells.

4,215,037

PARTIALLY PROTECTED HUMAN INSULIN-A-CHAIN AND PROCESS FOR ITS MANUFACTURE

Wolfgang König, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Sep. 6, 1978, Ser. No. 940,128

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1977, 2740406

Int. Cl.[2] C07C *103/52*

U.S. Cl. 260—112.5 R **3 Claims**

1. A process for the preparation of the peptide of the formula I as claimed which comprises:

H-Gly-Ile-Val-Glu(OBu^t)-Gln-Cys(Trt)-Cys(Trt)-Thr-(Bu^t)-Ser(Bu^t)-Ile-Cys(Trt)-Ser-Leu-Tyr(-Bu^t)Gln-Leu-Glu(OBu^t)-Asn-Tyr(Bu^t)-Cys(Trt)-Asn-OBu^t

(1) condensing

a peptide of the formula II

H-Cys(Trt)-Cys(Trt)-Thr(Bu^t)-Ser(Bu^t)-Ile-Cys(Trt)-Ser-Leu-Tyr(Bu^t)-Gln-Leu-Glu(OBu^t)-Asn-Tyr(-Bu^t)-Cys(Trt)-Asn-OBu^t

with a peptide of the formula III

X-Gly-Ile-Val-Glu(OBu^t)-Gln-OH

by the dicyclohexylcarbodiimide method with the addition of N-hydroxy compounds, in said formula III, X is an amino protective group capable of being split off with 5% trifluoroacetic acid in methylene chloride and

(2) selectively splitting off the amino protective group X from the obtained peptide with about 5% strength trifluoroacetic acid in methylene chloride.

4,215,038

PEPTIDES WHICH INHIBIT GONADAL FUNCTION

Jean E. F. Rivier; Catherine L. Rivier, and Wylie W. Vale, Jr., all of La Jolla, Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Continuation-in-part of Ser. No. 855,837, Nov. 30, 1977, abandoned. This application Oct. 16, 1978, Ser. No. 950,301
Int. Cl.[2] C07C *103/52*; A61K *37/00*
U.S. Cl. 260—112.5 LH 16 Claims

1. A peptide which is effective to inhibit release of steroids by the gonadotropins of mammalians, said peptide having the formula:

$$R_1\text{-}R_2\text{-}R_3\text{-Ser-Tyr-}R_4\text{-}R_5\text{-Arg-}R_6$$

wherein R_1 is selected from the group consisting of D-pGlu, D-Pro, D-Trp, D-His, D-Arg, D-Leu, formyl D-Pro, acetyl D-Pro, benzoyl D-Pro and β-Ala, R_2 is selected from the group consisting of D-Phe, D-His and D-Trp; R_3 is selected from the group consisting of D-Trp, D-Phe, and D-His; R_4 is selected from the group consisting of D-Trp, D-Phe and D-Tyr; R_5 is selected from the group consisting of Leu and N^{α} Me-Leu; and R_6 is selected from the group consisting of Pro—Gly—NH_2 and Pro—NH—CH_2—CH_3.

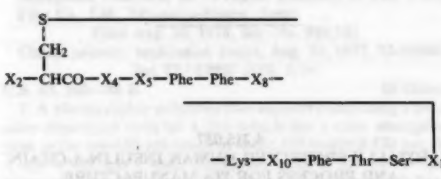
4,215,039

SOMATOSTATIN ANALOGUES

Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Feb. 15, 1979, Ser. No. 12,430
Int. Cl.[2] C07C *103/52*; C07G *7/00*
U.S. Cl. 260—112.5 S 7 Claims

1. A compound of the formula:



its linear precursor intermediates or non-toxic acid addition salts thereof in which

X_2 is H, NH_2, Ala—Gly—, Ala—D—Ala, Gly—Gly—Gly—, lower alkanoyl or benzoyl;
X_4 is Arg, His or Lys;
X_5 is His, Tyr or Glu;
X_8 is Trp or D—Trp;
X_{10} is Val, α—Abu, Leu, Phe or Tyr; and
X_{14} is Cys, D—Cys or —NH(CH_2)$_2$—S—.

4,215,040

DENSITY SEPARATION PROCESS

Douglas F. Hager, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 22, 1978, Ser. No. 972,631
Int. Cl.[2] A23J *1/14*
U.S. Cl. 260—123.5 14 Claims

13. A process for recovering protein granules from vegetable seed materials comprising:

(1) prewashing comminuted vegetable seed material with an alcohol/water mixture containing from about 50 to about 90 parts of alcohol by weight, and from about 50 to about 10 parts of water by weight to reduce the level of natural sugars in said seed material;

(2) separating the seed material from the alcohol/water mixture;

(3) suspending the seed material recovered from step (2) in an aqueous solution of a toxicologically-acceptable alkali metal salt of an organic carboxylic acid, said solution having a density of from about 1.20 to about 1.45 gm/ml and a water activity of from about 0.4 to about 0.85; and

(4) isolating the protein granules from the balance of the seed materials.

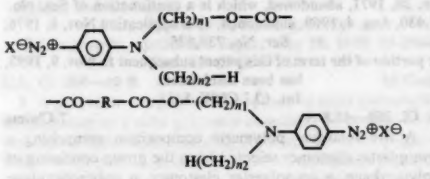
4,215,041

DIAZO SUBSTITUTED AMINO-BENZENE SALTS AND LITHOGRAPHIC PLATE COMPRISING SAME

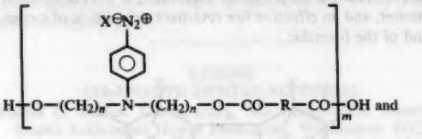
Georges A. Philipot, Paris; Jacques R. G. Haeck, Bonneuil-Sur-Marne, and Simone J. Kempen, Orly, all of France, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 12, 1978, Ser. No. 924,107
Claims priority, application France, Aug. 9, 1977, 77 24471
Int. Cl.[2] C07C *113/04*; G03C *1/54*; G03F *7/08*
U.S. Cl. 260—141 5 Claims

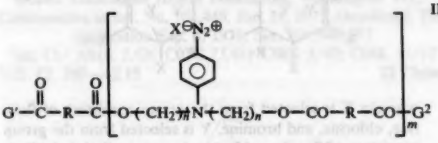
1. A diazonium compound corresponding to one of the following formulas:



I.

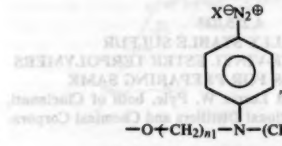


II.



III.

wherein G′ and G^2 are the same or different and are either OH or



R represents (a) alkylene having 1 to 12 carbon atoms, arylene having 6 to 10 carbon atoms, alkylarylene or alkylarylalkylene having 8 to 16 carbon atoms, (b) a photocrosslinkable moiety containing ethylenic unsaturation and having from 4 to 30 carbon atoms, or (c) a group containing an azide,

m is a number between 2 and 5,

n, n_1 and n_2 are the same or different and are whole numbers from 1 to 4, and

$X^{\ominus}$ is an anion.

4,215,042
COPPER, AND NICKEL COMPLEXES OF AZO DYESTUFFS

Arthur Bühler, Rheinfelden, and Hans U. Schütz, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

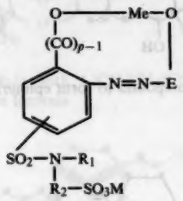
Continuation of Ser. No. 589,963, Jun. 24, 1975, abandoned. This application May 9, 1978, Ser. No. 904,358

Claims priority, application Switzerland, Jul. 16, 1974, 9764/74; May 27, 1975, 6750/75

Int. Cl.[2] C09B 45/14

U.S. Cl. 260—151 **5 Claims**

1. A copper or nickel complex dye of the formula



wherein

p is 1 or 2,

Me is copper or nickel,

R_1 is hydrogen or lower alkyl,

R_2 is lower alkylene or arylene,

M is hydrogen, an alkali metal or NH_4, and

E is ortho-coupled phenylene substituted by lower dialkylamino, lower alkylamino, or alkyl of 1 to 5 carbon atoms; and where arylene is napthylene or phenylene which is unsubstituted or substituted by chloro, lower alkyl or lower alkoxy.

4,215,043
BICYCLOMYCIN DERIVATIVES

Takashi Kamiya, Suita; Shizuo Maeno, Osaka, and Yoshihiko Kitaura, Suita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Oct. 15, 1976, Ser. No. 732,930

Claims priority, application United Kingdom, Oct. 20, 1975, 42912/75

Int. Cl.[2] C07D 498/06

U.S. Cl. 260—239.3 B **2 Claims**

1. 2',3'-O,O-isopropylidenebicyclomycin.

2. 5,11-dibromo-5,11-dihydrobicyclomycin.

4,215,044
SYNTHESIS OF α-FLUOROCARBONYL COMPOUNDS

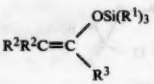
William J. Middleton, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 23, 1979, Ser. No. 32,347

Int. Cl.[2] C07D 243/24

U.S. Cl. 260—239.3 D **14 Claims**

1. Process for preparing an organic compound of the formula $R^2R^2CFC(O)R^3$, which process comprises contacting and reacting in a reaction mixture which includes an inert solvent, at a temperature of −40° C. to −100° C., ROF and



R is polyfluoroperhaloalkyl of 1–6 carbon atoms or $FOCF_2$;

R^1 is hydrocarbyl of 1–6 carbon atoms;

each R^2 is selected from H, alkyl of 1–17 carbon atoms, cycloalkyl of 3–6 carbon atoms, aryl, heteroaryl and such alkyl, cycloalkyl, aryl and heteroaryl substituted by halogen or alkoxy of 1–6 carbon atoms;

R^3 is selected from H, alkyl and haloalkyl of 1–16 carbon atoms, cycloalkyl of 3–10 carbon atoms, aryl and haloaryl, $OSi(R^1)_3$, OH, NH_2, alkoxy of 1–6 carbon atoms, aryloxy, NHR^1 and $NR^1{}_2$ wherein R^1 is alkyl of 1–6 carbon atoms, N-arylamino and nitrogen or sulfur heterocyclic of 4–5 carbon atoms;

R^3 and one R^2 taken together is a diradical which with the C═C group is carbocyclic, heterocyclic or haloheterocyclic, and recovering from the reaction mixture the compound of the formula $R^2R^2CFC(O)R^3$

4,215,045
^{123m}TE-LABELED BIOCHEMICALS AND METHOD OF PREPARATION

Furn F. Knapp, Jr., Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 29, 1978, Ser. No. 920,411

Int. Cl.[2] C07J 9/00

U.S. Cl. 260—397.2 **31 Claims**

1. A process for preparing a ^{123m}Te-labeled organic compound of the formula R-^{123m}Te-CH_2-R', R being alkyl, substituted alkyl, aryl or substituted aryl and R' being a steroidal side chain, alkyl amino acid or amino acid group, said process comprising the steps of:

(a) reacting a ^{123m}Te-symmetric diorgano ditelluride, $R_2{}^{123m}Te_2$, R being alkyl, substituted alkyl, aryl or substituted aryl, with a hydride reducing agent and a source of alkali metal ions to form an alkali metal organo telluride M-^{123m}Te-R;

(b) reacting said alkali metal organo telluride with a primary halogenated organic compound R_a'—X, R_a' being a 17-alkyl steroid group having 1–4 carbon atoms in said alkyl group, an alkyl amino acid group, or a group hydrolyzable to an alkyl amino acid group.

4,215,046
ROOM TEMPERATURE CURED ELASTOMER

Eugene C. Martin, and Arnold Adicoff, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 781,098, Mar. 25, 1977, Pat. No. 4,124,657. This application Aug. 24, 1978, Ser. No. 936,433

Int. Cl.[2] C07D 207/44

U.S. Cl. 260—326.26 **2 Claims**

1. The bismaleimide of dimer diamine.

2. A process for forming the bismaleamide of dimer diamine comprising the steps of:

A. pretreating dimer diamine by (1) dissolving it in heptane and washing the resulting solution with a sodium chloride solution containing sodium hydroxide to form an emulsion; (2) washing in aqueous sodium chloride and ethanol to break up the emulsion; and (3) drying;

B. reacting the thus pretreated dimer diamine with maleic anhydride to form a bismaleamic acid; and

C. cyclizing the bismaleamic acid into said bismaleimide by adding magnesium acetate tetrahydrate, acetic anhydride and triethylamine and heating at 94° C. for about one hour.

4,215,047

7-(ARGINYLAMINO)-4-METHYLCOUMARINS

Shumpei Sakakibara, Saita, Japan, assignor to Ajinomoto Company Incorporated, Tokyo, Japan

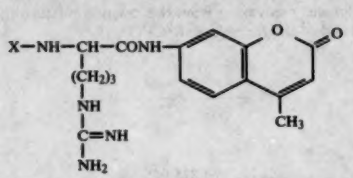
Filed Jun. 5, 1978, Ser. No. 912,851

Claims priority, application Japan, Jun. 6, 1977, 52-66517; Jun. 8, 1977, 52-67718; Jun. 8, 1977, 52-67719

Int. Cl.[2] C07D *405/12, 311/20*

U.S. Cl. 260—326.34 **25 Claims**

1. A compound having the formula:



wherein X is a substituent selected from the group consisting of glycyl, prolylglycyl, glutamyl-glycyl, isoleucyl-glutamyl-glycyl, seryl-glycyl, valyl-seryl-glycyl, leucyl-glycyl, valyl-leucyl-glycyl, phenylalanyl, prolyl-phenylalanyl, prolyl, valyl-prolyl, and acid addition salts thereof.

4,215,048

TOTAL SYNTHESIS OF (1RS, 4SR, 5RS)-4-(4,8-DIMETHYL-5-HYDROXY-7-NONENYL)-4-METHYL-3,8-DIOXABICYCLO[3.2.1]OCTANE-1-ACETIC ACID

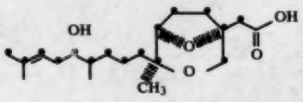
Robert H. K. Chen, Belle Mead, and Zoltan G. Hajos, Princeton, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed May 18, 1979, Ser. No. 40,345

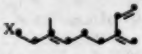
Int. Cl.[2] C07D *319/00*

U.S. Cl. 260—340.6 **12 Claims**

1. The process for the preparation of a compound of the formula



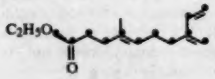
which comprises reacting a compound of the formula



with a compound of the formula

$LiCH_2CO_2C_2H_5$

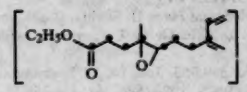
to form a triene ester of the formula



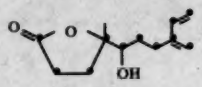
reacting the triene ester with

m-chloroperbenzoic acid

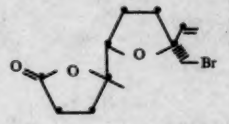
to form an intermediate of the formula



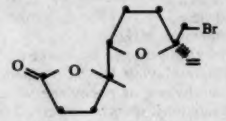
reacting the intermediate first with an aqueous base followed by reaction with acid to form a compound of the formula



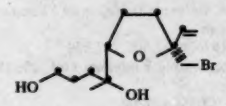
brominating the compound to form epimeric bromides of the formula



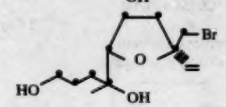
and



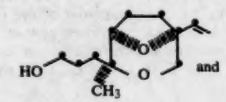
treating the mixture of lactones with lithium aluminum hydride to form a mixture of bromo diols of the formula



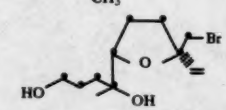
and



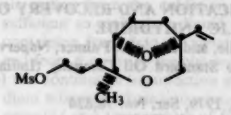
reacting the mixture of bromo diols with sodium hydride to form a mixture of cyclized and uncyclized compounds of the formula



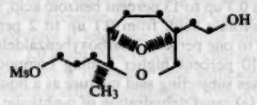
and



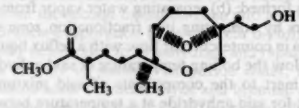
reacting the cyclized compound with methanesulfonyl chloride in the presence of a base to form a compound of the formula



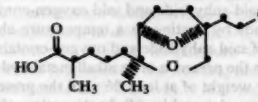
reacting the product formed with diborane followed by oxidation with hydrogen peroxide to give a primary alcohol of the formula



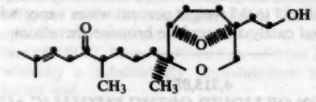
reacting the product with $LiCH(CH_3)CO_2CH_3$ to form a methyl ester of the formula



hydrolyzing the ester with base followed by acidification to form an acid of the formula

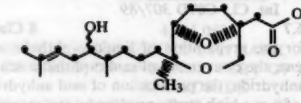


reacting the acid with lithium hydride followed by reaction with 3-methyl-2-butenyl lithium to give a ketone of the formula

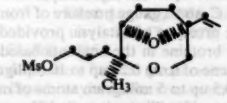


oxidizing the compound followed by reduction with sodium borohydride, wherein X is chloro or bromo, and Ms is a mesyl group.

8. The process for the preparation of a compound of the formula



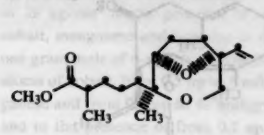
which comprises reacting a compound of the formula



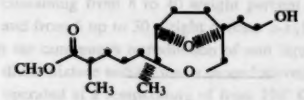
with a compound of the formula

$LiCH(CH_3)CO_2CH_3$

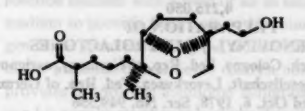
to form a compound of the formula



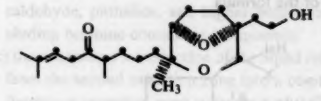
reacting the compound formed with diborane followed by oxidation with hydrogen peroxide to form a compound of the formula



hydrolyzing the ester to form an acid of the formula

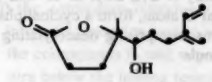


reacting the acid with lithium hydride followed by reaction with 3-methyl-2-butenyl lithium to form a compound of the formula

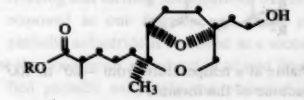


and reacting the keto-alcohol formed with an oxidizing agent followed by reduction with sodium borohydride, wherein Ms is a mesyl group.

11. A compound of the formula



12. A compound of the formula



wherein R is hydrogen or methyl.

4,215,049

ANTITUMORIGENIC LACTONE DERIVATIVE

Takeyoshi Takahashi, Tokyo; Hirozumi Eto, Yokohama, and Osamu Yoshioka, Yono, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

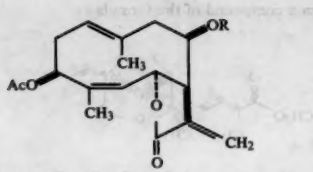
Filed Feb. 3, 1978, Ser. No. 874,945

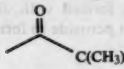
Claims priority, application Japan, Feb. 10, 1977, 52/13654

Int. Cl.[2] C07D *307/93*

U.S. Cl. 260—343.3 R **1 Claim**

1. Hiyodorilacton-B having the formula:



wherein R = 

4,215,050

PREPARATION OF HALOGENOVINYL-γ-BUTYROLACTONES

Reinhard Lantzsch, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

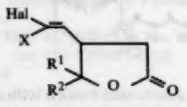
Filed Oct. 6, 1978, Ser. No. 949,356

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1977, 2747824

Int. Cl.[2] C07D *307/32*

U.S. Cl. 260—343.6 **14 Claims**

1. A process for the preparation of a halogenovinyl-γ-butyrolactone of the formula

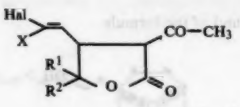


in which

Hal is F, Cl or Br,

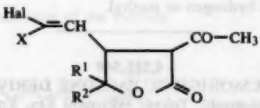
X is H, F, Cl or Br and

R^1 and R^2 each independently is C_{1-4}-alkyl or R^1 and R^2, together with the adjacent C atom, form a cycloaliphatic ring with up to 7 C atoms, comprising deacetylating an acetyl lactone of the formula



with a hypohalite at a temperature from −20° to 100° C.

13. An acetyl lactone of the formula



in which

Hal is F, Cl or Br,

X is H, F, Cl or Br and

R^1 and R^2 each independently is C_{1-4}-alkyl or R^1 and R^2 together with the adjacent C atom, form a cycloaliphatic ring with up to 7 C atoms.

4,215,051

FORMATION, PURIFICATION AND RECOVERY OF PHTHALIC ANHYDRIDE

Hobe Schroeder, Warrenville, and David A. Palmer, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 29, 1979, Ser. No. 70,624

Int. Cl.[2] C07D *307/89*

U.S. Cl. 260—346.7 **7 Claims**

1. A process for the formation, purification and recovery of phthalic anhydride from a mixture comprising on a weight basis from 70 up to 90 percent o-phthalic acid, from 1.5 up to 21 percent water, from 0.3 up to 13 percent benzoic acid, from 0.2 up to 2 percent o-toluic acid, from 0.1 up to 2 percent phthalide, from 0.2 up to one percent 2-carboxybenzaldehyde, and from 1.3 up to 10 percent higher boiling compounds; which process comprises subjecting said mixture as a liquid to the sequential steps of (a) rapid dehydration of o-phthalic acid to its anhydride under conditions for rapid evaporation of said anhydride wherein a mixture of vapors of said anhydride, water, and the oxygen-containing aromatic compounds comprising benzoic acid, o-toluic acid, phthalide and 2-carboxybenzaldehyde is formed; (b) separating water vapor from said mixture of vapors by contacting in a fractionation zone such mixture of vapors in countercurrent flow with a reflux liquid at a temperature below the boiling temperature of said anhydride which liquid is inert to the components of said mixture of vapors, a solvent for said anhydride at a temperature between its freezing point and its melting point, remains liquid at and below the freezing point temperature of said anhydride, and boils at a temperature below the boiling point temperature of said anhydride; (c) removal of phthalide from the resulting water free mixture of said anhydride and said oxygen-containing aromatic compounds by heating to a temperature above 200° C. such mixture of said anhydride and oxygen-containing aromatic compounds in the presence of an alkali metal hydroxide having a molecular weight of at least 56 until the presence of phthalide is no longer detectable; (d) fractionation of the mixture resulting from step (c) to remove: as a first fraction substantially all of the benzoic acid, o-toluic acid and 2-carboxybenzaldehyde; as a second fraction product phthalic anhydride and leave as a third fraction the compounds boiling higher than phthalic anhydride; and (e) contacting said product fraction and 0.25 to 0.5 weight percent water vapor with a solid noble metal catalyst to remove bromine therefrom.

4,215,052

PRODUCTION OF LIQUID ORTHO-PHTHALIC ACID AND ITS CONVERSION TO HIGH PURITY PHTHALIC ANHYDRIDE

Hobe Schroeder, Warrenville; David A. Palmer, Naperville; George E. Kuhlmann, Naperville; Houssam M. Naim, Naperville, and Nicholas C. Huie, Naperville, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 29, 1979, Ser. No. 70,663

Int. Cl.[2] C07D *307/89*

U.S. Cl. 260—346.7 **8 Claims**

1. A process for the preparation of liquid o-phthalic acid from liquid o-xylene, the conversion of said o-phthalic acid to impure phthalic anhydride, the purification of said anhydride, and the recovery of it as a high purity product by the cooperating sequential steps of:

(a) the continuous neat oxidation of liquid o-xylene with air in a stirred oxidation zone operated at a temperature of from 160° C. up to 200° C. and a gauge pressure of from 21 up to 29 kg/cm^2 in the presence of catalysis provided by cobalt, manganese and bromine in the amounts based on one gram mole of o-xylene of from 0.25 up to 10 milligram atoms of cobalt, from 0.5 up to 5 milligram atoms of manganese and from 0.5 up to 40 milligram atoms of bromine and in the presence of from 0.2 up to 7 weight percent water in the reaction medium, with a ratio of air to xylene fed to provide 2 to 15 volume percent oxygen in the spent

air exiting from the oxidation zone at a residence time sufficient to maintain a liquid reaction medium mixture containing from 8 to 40 weight percent o-phthalic acid and from 6 up to 30 weight percent o-xylene;

(b) the continuous introduction of said liquid reaction medium mixture and air into a second stirred oxidation zone operated at a temperature of from 210° C. up to 230° C. and a gauge pressure of from 26.7 up to 32 kg/cm^2 in the presence of from 1 up to 7 weight percent water in the reaction medium with a ratio of air to said liquid reaction medium to provide from 5 up to 10 volume percent oxygen in the spent air exiting the second oxidation zone and in the presence of additional catalyst components which provides at least one additional milligram atom of cobalt per 1.0 gram mole of xylene charged to the first oxidation zone for a residence time sufficient to provide a liquid reaction effluent containing from 85 up to 92 weight percent o-phthalic acid in addition to liquid water and impurity amounts of benzoic acid, o-toluic acid, 2-carboxybenzaldehyde, phthalide, and higher boiling compounds including bromine-containing compounds;

(c) the continuous introduction of the liquid reaction effluent from the second oxidation zone into a combination dehydration-evaporation zone wherein o-phthalic acid is rapidly dehydrated to its anhydride and rapidly evaporated to a mixture of phthalic anhydride water, benzoic acid, o-toluic acid, 2-benzaldehyde and bromine containing compound vapors together with entrained phthalide vapors;

(d) the continuous introduction of said mixture of vapors into and through a bed of particles containing a noble metal whereby bromine contamination is removed;

(e) the continuous introduction of said mixture of vapors into a fractionation system whose reflux liquid is inert to the components in said vapor mixture, boils at a temperature below the boiling temperature of phthalic anhydride which is a liquid at the freezing point temperature of said anhydride and dissolves it at a temperature between its freezing and melting temperatures wherein liquid water is removed as one fraction and liquid partially purified phthalic anhydride is removed as a second fraction;

(f) the continuous introduction of said liquid partially purified phthalic anhydride and potassium hydroxide in an amount thereof from 1.0 up to 10 milligram moles per 1.0 gram mole of phthalic anhydride into a heating zone operated at a temperature of from 250° C. up to a temperature of 350° C. for a residence time of from 2 up to 8 hours whereby a substantially phthalide-free liquid mixture forms; and

(g) the continuous introduction of said phthalide-free liquid mixture into a second fractionation system wherefrom compounds boiling below the boiling point temperature of phthalic anhydride are removed as a first fraction, phthalic anhydride product is removed as a second fraction and compounds boiling higher than phthalic anhydride are removed as a liquid residue fraction.

4,215,053

PRODUCTION OF ORTHO-PHTHALIC ACID AND ITS CONVERSION AND RECOVERY OF PHTHALIC ANHYDRIDE

David A. Palmer; George E. Kuhlmann; Houssam M. Naim; Nicholas C. Huie, all of Naperville, and Hobe Schroeder, Warrenville, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 29, 1979, Ser. No. 70,664
Int. Cl.^{2} C07D *307/89*
U.S. Cl. 260—346.7 **6 Claims**

1. A process for the preparation of liquid o-phthalic acid from liquid o-xylene, the conversion of said o-phthalic acid to impure phthalic anhydride, the purification of said anhydride, and the recovery of it as a high purity product by the cooperating sequential steps of

(a) the continuous neat oxidation of liquid o-xylene with air in a stirred oxidation zone operated at a temperature from 160° C. up to 200° C. and a gauge pressure of from 21 up to 29 kg/cm^2 in the presence of catalysis provided by cobalt, manganese and bromine in the amounts based on one gram mole of o-xylene of from 0.25 up to 10 milligram atoms of cobalt, from 0.5 up to 5 milligram atoms of manganese and from 0.5 up to 40 milligram atoms of bromine and in the presence of from 0.2 up to 7 weight percent water in the reaction medium, with a ratio of air to xylene fed to provide 2 to 15 volume percent oxygen in the spent air exiting from the oxidation zone at a residence time sufficient to maintain a liquid reaction medium mixture containing from 8 to 40 weight percent o-phthalic acid and from 6 up to 30 weight percent o-xylene;

(b) the continuous introduction of said liquid reaction medium mixture and air into a second stirred oxidation zone operated at a temperature of from 210° C. up to 230° C. and a gauge pressure of from 26.7 up to 32 kg/cm^2 in the presence of from 1 up to 7 weight percent water in the reaction medium with a ratio of air to said liquid reaction medium to provide from 5 up to 10 volume percent oxygen in the spent air exiting the second oxidation zone and in the presence of additional catalyst components which provides at least one additional milligram atom of cobalt per 1.0 gram mole of xylene charged to the first oxidation zone for a residence time sufficient to provide a liquid reaction effluent containing from 85 up to 92 weight percent o-phthalic acid in addition to liquid water and impurity amounts of benzoic acid, o-toluic acid, 2-carboxybenzaldehyde, phthalide, and higher boiling compounds including bromine-containing compounds;

(c) the continuous introduction of the liquid reaction effluent from the second oxidation zone into a combination dehydration-evaporation zone wherein o-phthalic acid is rapidly dehydrated to its anhydride and rapidly evaporated to a mixture of phthalic anhydride, water, benzoic acid, o-toluic acid, 2-carboxybenzaldehyde and bromine-containing compounds' vapors together with entrained phthalide vapors;

(d) the continuous introduction of said mixture of vapors into a fractionation system whose reflux liquid is inert to the components in said vapor mixture, boils at a temperature below the boiling temperature of phthalic anhydride which is a liquid at the freezing point temperature of said anhydride and dissolves it at a temperature between its freezing and melting temperatures wherein liquid water is removed as one fraction and liquid partially purified phthalic anhydride is removed as a second fraction;

(e) the continuous introduction of said liquid partially purified phthalic anhydride and potassium hydroxide in an amount thereof from 1.0 up to 10 milligram moles per 1.0 gram mole of phthalic anhydride into a heating zone operated at a temperature of from 250° C. up to a temperature of 350° C. for a residence time of from 2 up to 8 hours whereby a substantially phthalide-free liquid mixture forms; and

(f) the continuous introduction of said phthalide-free liquid mixture into a second fractionation system wherefrom compounds boiling below the boiling point temperature of phthalic anhydride are removed as a first fraction, phthalic anhydride product is removed as a second fraction, and compounds boiling higher than phthalic anhydride are removed as a liquid residue fraction.

4,215,054

PRODUCTION OF LIQUID ORTHO-PHTHALIC ACID AND ITS CONVERSION TO HIGH PURITY PHTHALIC ANHYDRIDE

Hobe Schroeder, Warrenville; George E. Kuhlmann, Naperville; Sydney G. Horsfield, Wheaton, and David A. Palmer, Naperville, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 29, 1979, Ser. No. 70,827
Int. Cl.[2] C07D *307/89*
U.S. Cl. 260—346.7 **4 Claims**

1. A process for preparing high purity phthalic anhydride which comprises the combination of the sequential continuous steps of (a) single-step neat oxidation of liquid o-xylene with air or air enriched to 50 volume percent oxygen with oxygen gas in a stirred oxidation zone operated at a temperature of from 200° C. up to 235° C. under a gauge pressure of from 23 up to 31 kg/cm^2 and for a residence time therein of from 90 up to 120 minutes, in the presence of from 2 up to 21 weight percent water and based on 1.0 gram mole of o-xylene in the presence of from 5 up to 20 grams of benzoic acid, from 0.5 up to 20 milligram atoms of cobalt, from 0.15 up to 20 milligram atoms of manganese and from 0.225 up to about 60 milligram atoms of bromine whereby a liquid mixture containing from 70 up of 85 weight percent o-phthalic acid is formed containing phthalide as one impurity; (b) rapid dehydration of o-phthalic acid content of said liquid mixture to phthalic anhydride at a pressure of from one atmosphere down to 0.05 atmosphere and a temperature of from 180° C. to 250° C. to rapidly vaporize said anhydride and water from the liquid mixture; (c) removal of bromine by contacting said vapor mixture with a noble metal catalyst; (d) separation of water vapor from said vaporized phthalic anhydride by direct contact in a fractionating system between the vapor mixture and a water immiscible and inert heat exchange liquid which boils at a temperature below the boiling temperature of said anhydride, is a liquid at a temperature below the freezing temperature of said anhydride, and is a solvent for said anhydride at a temperature between its freezing point and melting point wherefrom a water-free liquid impure phthalic anhydride at a temperature of from 200° C. up to 250° C. is removed as a bottom fraction from said fractionating system; (e) removal of phthalide from said liquid impure phthalic anhydride by heating it to a temperature of from 250° C. up to 350° C. in the presence of from 1.0 up to 10 milligram moles of potassium hydroxide; and (f) fractionation of said phthalide-free impure phthalic anhydride at a pressure of from 0.026 up to 1.0 atmosphere to remove a first fraction containing all of the benzoic acid, a second fraction comprising the phthalic anhydride product and a third fraction comprising materials boiling higher than phthalic anhydride.

4,215,055

PRODUCTION OF LIQUID ORTHO-PHTHALIC ACID AND ITS CONVERSION TO HIGH PURITY PHTHALIC ANHDYRIDE

David A. Palmer; George E. Kuhlmann, both of Naperville; Sydney G. Horsfield, Wheaton, and Hobe Schroeder, Warrenville, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 29, 1979, Ser. No. 70,828
Int. Cl.[2] C07D *307/89*
U.S. Cl. 260—346.7 **4 Claims**

1. A process for preparing high purity phthalic anhydride which comprises the combination of the sequential continuous steps of (a) single-step neat oxidation of liquid o-xylene with air or air enriched to 50 volume percent oxygen with oxygen gas in a stirred oxidation zone operated at a temperature of from 200° C. up to 235° C. under a gauge pressure of from 23 up to 31 kg/cm^2 and for a residence time therein of from 90 up to 120 minutes, in the presence of from 2 up to 21 weight percent water and based on 1.0 gram mole of o-xylene in the presence of from 5 up to 20 grams of benzoic acid, from 0.5 up to 20 milligram atoms of cobalt, from 0.15 up to 20 milligram atoms of manganese and from 0.225 up to about 60 milligram atoms of bromine whereby a liquid mixture containing from 70 up to 85 weight percent o-phthalic acid is formed, containing phthalide as one impurity; (b) rapid dehydration of o-phthalic acid content of said liquid mixture to phthalic anhydride at a pressure of from one atmosphere down to 0.05 atmosphere and a temperature of from 180° C. to 250° C., and to rapidly vaporize said anhydride and water from the liquid mixture; (c) separation of water vapor from said vaporized phthalic anhydride by direct contact in a fractionating system between the vapor mixture and a water immiscible and inert heat exchange liquid which boils at a temperature below the boiling temperature of said anhydride, is a liquid at a temperature below the freezing temperature of said anhydride, and is a solvent for said anhydride at a temperature between its melting point and freezing point wherefrom a water-free liquid impure phthalic anhydride at a temperature of from 200° C. up to 250° C. is removed as a bottom fraction from said fractionating system; (d) removal of phthalide from said liquid impure phthalic anhydride by heating it to a temperature of from 250° C. up to 350° C. in the presence of from 1.0 up to 10 milligram moles of potassium hydroxide; and (e) fractionation of said phthalide-free impure phthalic anhydride at a pressure of from 0.026 up to 1.0 atmosphere to remove a first fraction containing all of the benzoic acid, a second fraction comprising the phthalic anhydride product and a third fraction comprising materials boiling higher than phthalic anhydride.

4,215,056

FORMATION, PURIFICATION AND RECOVERY OF PHTHALIC ANHYDRIDE

Hobe Schroeder, Warrenville, and David A. Palmer, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 29, 1979, Ser. No. 70,625
Int. Cl.[2] C07D *307/89*
U.S. Cl. 260—346.7 **6 Claims**

1. A process for the formation, purification and recovery of phthalic anhydride from a mixture comprising on a weight basis from 70 up to 90 percent o-phthalic acid, from 1.5 up to 21 percent water, from 0.3 up to 13 percent benzoic acid, from 0.2 up to 2 percent o-toluic acid, from 0.1 up to 2 percent phthalide, from 0.2 up to one percent 2-carboxybenzaldehyde, and from 1.3 up to 4 percent higher boiling compounds; which process comprises subjecting said mixture as a liquid to the sequential steps of (a) rapid dehydration of o-phthalic acid to its anhydride under conditions for rapid evaporation of said anhydride wherein a mixture of vapors of said anhydride, water and the oxygen-containing aromatic compounds comprising benzoic acid, o-toluic acid, phthalide and 2-carboxybenzaldehyde is formed; (b) separating water vapor from said mixture of vapors by contacting in a fractionation zone such mixture of vapors in countercurrent flow with a reflux liquid at a temperature below the boiling temperature of said anhydride, which liquid is inert to the components of said mixture of vapors, a solvent for said anhydride at a temperature between its freezing point and its melting point, remains liquid at and below the freezing point temperature of said anhydride, boils at a temperature below the boiling point temperature of said anhydride, is substantially immiscible with water, and does not form an azeotrope with said anhydride; (c) removal of phthalide from the resulting water-free mixture of said anhydride and said oxygen-containing aromatic compounds by heating to a temperature above 250° C. such mixture of said anhydride and oxygen-containing aromatic compounds in the presence of an alkali metal hydroxide having a molecular weight of at least 56 until the presence of phthalide is no longer detectable; and (d) fractionation of the mixture resulting from step (c) to remove: as a first fraction substantially all of the benzoic acid, o-toluic acid and 2-carboxybenzaldehyde; as a second fraction product phthalic anhydride and leave as a third fraction the compounds boiling higher than phthalic anhydride.

4,215,057

PROCESS FOR THE PRODUCTION OF SUBSTITUTED FURANS

Rudolf Kaufmann, Burghausen; Hermann Bräunling, Munich; Norman Häberle, Munich, and Reinhard Müller, Munich, all of Fed. Rep. of Germany, assignors to Consortium für Elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

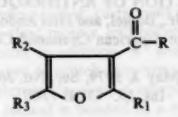
Filed Nov. 24, 1978, Ser. No. 963,645

Claims priority, application Fed. Rep. of Germany, May 1, 1978, 2800502

Int. Cl.² C07D *307/46, 307/68*

U.S. Cl. 260—347.5 6 Claims

1. A process for the production of substituted furans of the general formula



wherein R is a member of the group consisting of alkoxy radicals with 1–6 C-atoms, a substituted aryloxy radical, an unsubstituted aryloxy radical, and an alkyl radical, R_1 is an alkyl or aryl radical with 1–6 C-atoms, R_2 and R_3 respectively, or both, represent an alkyl radical with 1–6 C-atoms, and hydrogen, by reacting a β-dicarbonyl compound with an α-chlorocarbonyl compound in the presence of a compound capable of combining with hydrochloric acid formed, the process being characterized in that the reaction is carried out in water at pH values between 2 and 7 with addition of equimolar amounts of an alkaline earth carbonate and wherein to the reaction mixture 0.1–20 mols % are added of a substituted or unsubstituted mononitrogen compound calculated on the β-dicarbonyl compound.

4,215,058

PROCESS OF EPOXIDATION OF OILS

Eric Jourdan-Laforte, Ecully, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Brevets Georges Claude, Paris, France

Filed Aug. 29, 1978, Ser. No. 937,873

Claims priority, application France, Sep. 13, 1977, 77 27563

Int. Cl.² C07D *301/16*

U.S. Cl. 260—348.27 7 Claims

1. In a process for the epoxidation of soybean oil by the action of a lower aliphatic peracid, the improvement wherein the epoxidation reaction is performed in the presence of an amount sufficient to improve the stability of the resultant epoxidized soybean oil of a complexing agent, selected from the group consisting of diethylenetriaminopentacetic acid and alkali and alkaline-earth salts thereof, said amount being between 5 and 100 mg per kg of said oil.

4,215,059

BORIDE CATALYST FOR EPOXIDIZING OLEFINIC COMPOUNDS

Robert M. Gipson, Austin, Tex., assignor to Texaco Development Corporation, White Plains, N.Y.

Division of Ser. No. 565,004, Apr. 4, 1975, Pat. No. 4,038,290.

This application Jun. 25, 1976, Ser. No. 699,837

Int. Cl.² C07D *301/20*

U.S. Cl. 260—348.29 7 Claims

1. A method for the liquid phase epoxidation of an olefin having from about 2 to about 60 carbon atoms with an organic hydroperoxide comprising the step of:

intimately contacting said olefin with said organic hydroperoxide at lower temperatures of about 25° C. to about 200° C. and pressures sufficient to maintain the product and reactants substantially in liquid phase in the presence of a catalytically effective amount of a binary boride of boron and a metal selected from the group consisting of tungsten, molybdenum and chromium.

4,215,060

BORIDE CATALYST FOR EPOXIDIZING OLEFINIC COMPOUNDS

Robert M. Gipson, Austin, Tex., assignor to Texaco Development Corporation, White Plains, N.Y.

Division of Ser. No. 565,004, Apr. 4, 1975, Pat. No. 4,038,290.

This application Jul. 9, 1976, Ser. No. 703,868

Int. Cl.² C07D *301/20*

U.S. Cl. 260—348.29 7 Claims

1. A method for the liquid phase epoxidation of an olefin having from about 2 to about 60 carbon atoms with an organic hydroperoxide comprising the step of:

intimately contacting said olefin with said organic hydroperoxide at lower temperatures of about 25° C. to about 200° C. and pressures sufficient to maintain the product and reactants substantially in liquid phase in the presence of a catalytically effective amount of a binary boride of boron and a metal selected from the group consisting of vanadium, niobium and tantalum.

4,215,061

BORIDE CATALYST FOR EPOXIDIZING OLEFINIC COMPOUNDS

Robert M. Gipson, Austin, Tex., assignor to Texaco Development Corporation, White Plains, N.Y.

Division of Ser. No. 565,004, Apr. 4, 1975, Pat. No. 4,038,290.

This application Jul. 9, 1976, Ser. No. 703,869

Int. Cl.² C07D *301/20*

U.S. Cl. 260—348.29 2 Claims

1. A method for the liquid phase epoxidation of an olefin having from about 2 to about 60 carbon atoms with an organic hydroperoxide comprising the step of:

intimately contacting said olefin with said organic hydroperoxide at lower temperatures of about 25° C. to about 200° C. and pressures sufficient to maintain the product and reactants substantially in liquid phase in the presence of a catalytically effective amount of a binary boride of boron and zirconium.

4,215,062

ANTHRACYCLINE SYNTHESIS

Lester A. Mitscher, Lawrence, Kans., assignor to University of Kansas Endowment Association, Lawrence, Kans.

Filed May 22, 1978, Ser. No. 908,256

Int. Cl.² C07C *87/10, 49/74*

U.S. Cl. 260—365 30 Claims

1. A process for producing 5,7,12-trihydroxy-1,2,3,4,6,11-hexahydro-2,6,11-trioxonaphthacene from aloe-emodin comprising

a. halogenating aloe-emodin to produce 1,8-dihydroxy-3-halomethyl-9,10-anthraquinone;

b. reacting 1,8-dihydroxy-3-halomethyl-9,10-anthraquinone with a dialkyl-2-carbalkoxysuccinate in which the alkyl and alkoxy groups contain up to about 6 carbon atoms, to produce 1,8-dihydroxy-3-(2,2,3-trialkoxycarbonylpropyl)-9,10-anthraquinone;

c. saponifying 1,8-dihydroxy-3-(2,2,3-trialkoxycarbonylpropyl)-9,10-anthraquinone to produce 1,8-dihydroxy-3-(2,2,3-tricarboxypropyl)-9,10-anthraquinone;

d. decarboxylating 1,8-dihydroxy-3-(2,2,3-tricarboxypropyl)-9,10-anthraquinone to produce 1,8-dihydroxy-3-(2,3-dicarboxypropyl)-9,10-anthraquinone;

e. reducing 1,8-dihydroxy-3-(2,3-dicarboxypropyl)-9,10-anthraquinone to 1,8 dihydroxy-3-(2,3-dicarboxypropyl)-9,10-(H)-anthr-9-one;

f. cyclizing 1,8 dihydroxy-3-(2,3-dicarboxypropyl)-9,10-(H)-anthr-9-one to produce 6,8-dihydroxy-1,2,3,4,7,12-hexahydro-1,7-dioxo-[1,2]-benzanthracene-3-carboxylic acid;

g. oxidizing 6,8 dihydroxy-1,2,3,4,7,12-hexahydro-1,7 dioxo-

[1,2]-benzanthracene-3-carboxylic acid to produce 6,8-dihydroxy-1,2,3,4,7,12-hexahydro-1,7,12-trioxo-[1,2]-benzanthracene-3-carboxylic acid;

h. subjecting 6,8-dihydroxy-1,2,3,4,7,12-hexahydro-1,7,12-trioxo-[1,2]-benzanthracene-3-carboxylic acid to Baeyer-Villiger oxidization to produce 1,4,5-trihydroxy-2-(2,3-dicarboxypropyl)-9,10-anthraquinone;

i. reducing 1,4,5-trihydroxy-2-(2,3-dicarboxypropyl)-9,10-anthraquinone to produce 1,4,8-trihydroxy-3-(2,3-dicarboxypropyl)-9,10-(H)-anthr-9-one;

j. condensing 1,4,8-trihydroxy-3-(2,3-dicarboxypropyl)-9,10-(H)-anthr-9-one to produce 5,7-12-trihydroxy-1,2,3,4,6,11-hexahydro-4,6-dioxonaphthacene-2-carboxylic acid;

k. oxidizing 5,7,12-trihydroxy-1,2,3,4,6,11-hexahydro-4,6-dioxonaphthacene to produce 5,7,12-trihydroxy-1,2,3,4,6,11-hexahydro-4,6,11-trioxonaphthacene-2-carboxylic acid;

l. reducing 5,7,12-trihydroxy-1,2,3,4,6,11-hexahydro-4,6,11-trioxonaphthacene-2-carboxylic acid to produce 5,7,12-trihydroxy-1,2,3,4,6,11-hexahydro-6,11-dioxonaphthacene-2-carboxylic acid;

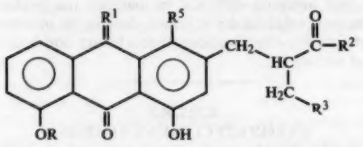
m. alkylating 5,7,12-trihydroxy-1,2,3,4,6,11-hexahydro-6,11-naphthacene-2-carboxylic acid to produce 2-methylcarbonyl-5,7,12-trihydroxy-1,2,3,4,6,11-hexahydro-6,11-dioxonaphthacene;

n. oxidizing 2-methylcarbonyl-5,7,12-trihydroxy-1,2,3,4,6,11-hexahydro-6,11-dioxonaphthacene to produce 5,7,12-trihydroxy-2-acetoxy-1,2,3,4,6,11-hexahydro-6,11-dioxonaphthacene;

o. hydrolyzing 5,7,12-trihydroxy-2-acetoxy-1,2,3,4,6,11-hexahydro-6,11-dioxonaphthacene to produce 2,5,7,12-tetrahydroxy-1,2,3,4,6,11-hexahydro-6,11-dioxonaphthacene; and

p. oxidizing 2,5,7,12-tetrahydroxy-1,2,3,4,6,11-hexahydro-6,11-dioxonaphthacene to produce 5,7,12-trihydroxy-1,2,3,4,6,11-hexahydro-2,6,11-trioxonaphthacene.

3. A compound having the formula:



wherein:

R is H or R^4;

R^1 is O or H_2;

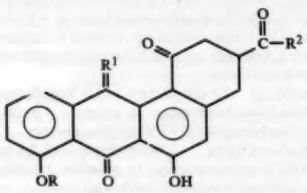
R^2 is OH or OR^4;

R^3 is COOH or $COOR^4$;

R^4 is a C_1 to C_6 alkyl group; and

R^5 is H or OH.

15. A compound having the formula:



wherein:

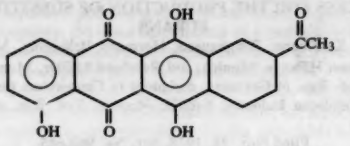
R is H or R^3;

R^1 is O or H_2;

R^2 is OH or OR^3;

R^3 is a C_1 to C_6 alkyl group.

23. A compound having the formula:



4,215,063

OXIDATION CATALYST AND USE IN THE PRODUCTION OF ANTHRAQUINONE

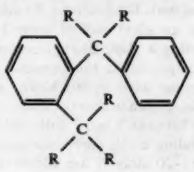
Joseph L. Schmitt, Jr., Bethel, and Hiei Ando, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 3, 1979, Ser. No. 35,664

Int. Cl.[2] **C09B** *1/00*

U.S. Cl. 260—369 **15 Claims**

1. In a process for the manufacture of anthraquinone by oxidation of diphenylmethane derivatives of the formula:



wherein each R may be the same or different and is selected from hydrogen or an aliphatic radical, by means of oxygen in the gas phase in the presence of a catalyst at an elevated temperature, the improvement comprising using a catalyst which is comprised of vanadium, calculated as vanadium pentoxide, and a second metal selected from the group consisting of ruthenium, rhenium, cerium, niobium and rhodium in a weight ratio of about 2:1 to 50:1.

4,215,064

PHOSPHOBETAINES

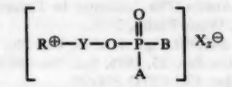
Martin K. O. Lindemann, Bridgewater; Raymond L. Mayhew, Summit; Anthony J. O'Lenick, Jr., Fairlawn, and Robert J. Verdicchio, Succasunna, all of N.J., assignors to Johnson & Johnson, New Brunswick and Mona Industries, Inc., Paterson, both of, N.J.

Filed Nov. 30, 1978, Ser. No. 965,461

Int. Cl.[2] **A23J** *7/00;* **C07F** *9/02;* **C11C** *3/00*

U.S. Cl. 260—403 **19 Claims**

1. Phosphobetaine compounds of the formula



(I)

wherein

A is selected from O^-, OM, and $—O—Y—R^+$

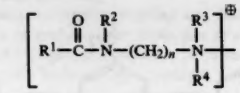
B is selected from O^- and OM'

X^- is an anion

z is an integer from 0 to 2

with the proviso that only one of A and B can be O^- and z is of a value necessary for charge balance;

R is an amidoamine reactant moiety of the formula



wherein

R^1 is alkyl, alkenyl, alkoxy, or hydroxyalkyl of from 5 to 22 carbon atoms each, or aryl or alkaryl of up to 20 carbon atoms,

R^2 is hydrogen or alkyl, hydroxyalkyl or alkenyl of up to 6 carbon atoms each or cycloalkyl of up to 6 carbon atoms, preferably of from 2 to 5 carbon atoms, or polyoxyalkalene of up to 10 carbon atoms,

R^3 and R^4, which may be the same or different, are selected from alkyl, hydroxyalkyl, carboxyalkyl of up to 6 carbon atoms in each alkyl moiety, and polyoxyalkylene of up to 10 carbon atoms; in addition, R^3 and R^4 taken together with the nitrogen to which they are attached, may represent an N-heterocycle, e.g., a morpholino structure, in which the Y radical is bonded to a ring atom of said N-heterocycle other than the nitrogen of the R moiety;

n is an integer from 2 to 12; Y is alkylene, optionally interrupted by up to 3 oxygen atoms, of up to 12 carbon atoms, which alkylene chain may optionally be substituted with lower alkyl, alkoxy, hydroxy or hydroxyalkyl, e.g. of not more than 10 carbon atoms each;

M and M', which may be the same or different, are (a) hydrogen, (b) an organic radical selected from alkyl or hydroxyalkyl of up to 6 carbon atoms, polyhydroxyalkyl of up to 10 carbon atoms, glyceryl, cycloalkyl of up to 6 carbon atoms, aryl or arylalkyl of up to 10 carbon atoms, or (c) a salt radical selected from alkali metals, alkaline earth metals, and mono-, di-, or tri-ethanolamine, provided that when either M or M' is an organic radical (b), the other M and M' must be hydrogen or a salt radical (c).

4,215,065

ACID SEPARATION

A. John Solodar, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 2, 1979, Ser. No. 451

Int. Cl.[2] C11C *1/04, 3/02*

U.S. Cl. 260—415 **16 Claims**

8. The method of preparation and separation for obtaining separate high and low normal content fractions of carbonylation products which comprises hydroesterifying a mixed olefin feed containing both linear and branched molecules and varying in molecular weight over at least a three-carbon range by reacting such olefin feed with carbon monoxide and alcohol over a catalyst at elevated temperature and pressure hydroesterification conditions to obtain a hydroesterification product, and subjecting such hydroesterification product to partial hydrolysis thereby hydrolyzing more of the normal esters than of the branched esters, and separating the esters from the resulting acids to provide acids having enriched content of normal acids and esters enriched in content of branched esters.

4,215,066

BINUCLEAR RHODIUM COMPLEX AS A HYDROFORMYLATION AND HYDROGENATION CATALYST

Philippe Kalck, Auzeville; Rene Poilblanc, Castenet Colosan, and Antoine Gaset, Toulouse, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

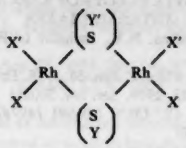
Filed Nov. 13, 1978, Ser. No. 960,001

Claims priority, application France, Nov. 10, 1977, 77 33865

Int. Cl.[2] C07F *15/00*

U.S. Cl. 260—429 R **5 Claims**

1. A hydroformylation and hydrogenation catalyst having the formula:



wherein X and X' can be the same or different; when X and X' are the same they are organic tertiary phosphite groups and when different X is a CO group and X' is an organic tertiary phosphite group or an aromatic phosphine group, and SY and SY' are thiolat groups.

4,215,067

PROCESS FOR THE PREPARATION OF ZINC SALTS OF DIHYDROCARBYLDITHIOPHOSPHORIC ACIDS

Cecil G. Brannen, West Chicago, and Nicolas C. Petrellis, Lisle, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 29, 1978, Ser. No. 974,327

Int. Cl.[2] C07F *3/06*

U.S. Cl. 260—429.9 **12 Claims**

1. A process for the production of substantially haze-free zinc dihydrocarbyl dithiophosphate comprising reacting a dihydrocarbyl dithiophosphoric acid and zinc oxide in the presence of a surface active agent.

4,215,068

PREPARATION OF 1,3-DICYANOCYCLOPENTANE

Ching-Yong Wu, O'Hara Township, Allegheny County, and Harold E. Swift, Gibsonia, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 854,665, Nov. 25, 1977, abandoned. This application Apr. 2, 1979, Ser. No. 26,005

Int. Cl.[2] C07C *120/02, 121/46*

U.S. Cl. 260—464 **9 Claims**

1. A method of hydrocyanating 2-cyanocyclopentene to a product mixture predominant in 1,3-dicyanocyclopentane which comprises contacting a composition comprising 2-cyanocyclopentene with hydrogen cyanide at a temperature from about −25° C. to about 200° C. in the presence of

(a) a zero valent nickel complex, free of CO, having the formula $Ni(A^1)(A^2)(A^3)(A^4)$ where A^1, A^2, A^3 and A^4 are neutral ligands which may be the same or different and have the formula P (X) (Y) (Z) wherein X and Y are selected from the class consisting of R and OR, and Z has the formula OR, wherein the three R's may be the same or different and wherein R is selected from the class consisting of alkyl and aryl groups containing up to 18 carbon atoms; and

(b) a promoting amount of a compound containing a metal selected from the group consisting of zinc, cadmium, beryllium, aluminum, gallium, indium, silver, titanium, zirconium, hafnium, germanium, tin, vanadium, niobium, scandium, chromium, molybdenum, tungsten, manganese, rhenium, palladium, thorium, erbium, iron and cobalt; wherein

(1) the molar ratio of said promoter to the nickel complex is from about 1:16 to 50:1; and

(2) the molar ratio of the composition comprising 2-cyanocyclopentene to the nickel complex is from about 10:1 to 2,000:1.

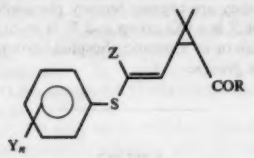
9. The compound 1,3-dicyanocyclopentane.

4,215,069
ARYLTHIOVINYLCYCLOPROPANECARBOXYLATE INTERMEDIATES

John F. Engel, Medina, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 872,413, Jan. 26, 1978. This application Jun. 18, 1979, Ser. No. 50,011
Int. Cl.[2] C07C *149/40, 149/415*
U.S. Cl. 260—465 D 1 Claim

1. A compound of the formula



wherein
Y is independently halogen, cyano, lower alkyl, lower haloalkyl, lower alkoxy or lower alkylthio,
n is 0, 1, 2, or 3,
Z is hydrogen, halogen, cyano or lower alkyl, and
R is halogen, hydroxy or lower alkoxy.

4,215,070
N-(PHOSPHONOACETYL)-L-ASPARTIC ACID COMPOUNDS AND METHODS FOR THEIR PREPARATION

Robert J. Schultz, Amherst, and Fred W. Starks, Kenmore, both of N.Y., assignors to Starks Associates, Inc., Buffalo, N.Y.

Continuation-in-part of Ser. No. 932,501, Aug. 10, 1978, which is a continuation-in-part of Ser. No. 851,382, Nov. 14, 1977, abandoned. This application Oct. 25, 1978, Ser. No. 954,579
Int. Cl.[2] C07F *9/38*
U.S. Cl. 260—502.5 1 Claim

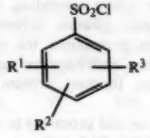
1. A compound which is N-(phosphonoacetyl)-L-aspartic acid, disodium salt.

4,215,071
PROCESS FOR THE PREPARATION OF SULPHONIC ACID CHLORIDES

Heinz U. Blank, Odenthal, and Theodor Pfister, Wuppertal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

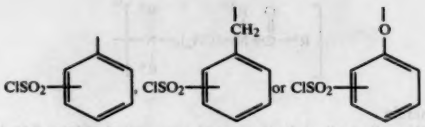
Filed Sep. 8, 1978, Ser. No. 941,099
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1977, 2743542
Int. Cl.[2] C07C *143/26*
U.S. Cl. 260—543 R 5 Claims

1. In a process for the preparation of sulphonic acid chloride of the formula

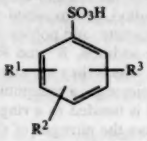


(I)

wherein
R^1, R^2 and R^3 are identical or different and denote hydrogen, a lower alkyl radical or a cycloalkyl radical, halogen, nitro, aryl, aralkyl, aryl ether or a radical



or wherein
adjacent radicals R^1 and R^2 are linked to form a cycloaliphatic or aromatic carbocyclic ring which is optionally substituted by a sulphonic acid chloride group, by contacting a sulphonic acid of the formula



(II)

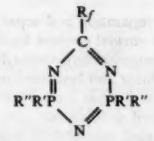
wherein
R^1, R^2 and R^3 have the above-described meanings with phosgene in the presence of N,N-dialkylcarboxylic acid amide catalyst, the improvement which comprises carrying out the process in the presence of a sulphonating agent.

4,215,072
DIPHOSPHA-S-TRIAZINES

Kazimiera J. L. Paciorek, Corona Del Mar; Reinhold H. Kratzer, Irvine; Jacquelyn Kaufman, Costa Mesa; Thomas I. Ito, and James H. Nakahara, both of Fountain Valley, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 7, 1979, Ser. No. 10,092
Int. Cl.[2] C07F *9/65, 9/28*
U.S. Cl. 260—551 P 5 Claims

1. A diphospha-s-triazine having the following structural formula:



where R_f is a perfluoroalkyl or perfluoroalkylether group, and R' and R" are each the same or different aryl group.

4,215,073
PROCESS FOR THE PRODUCTION OF DIAMINES

Boy Cornils, Dinslaken; Werner Konkol, Oberhausen; Gerhard Diekhaus, Oberhausen, and Ernst Wiebus, Oberhausen, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed May 30, 1979, Ser. No. 43,949
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1978, 2824423
Int. Cl.[2] C07C *85/08*
U.S. Cl. 260—563 D 8 Claims

1. A process for the production of an aliphatic or cycloaliphatic diamine having 4 to 18 carbon atoms which comprises the steps of:
A. in a first stage contacting an aliphatic or cycloaliphatic dialdehyde with a monoamine at atmospheric pressure

and at a temperature up to 100° C. to form the corresponding diazomethyne; and

B. in a subsequent stage contacting said diazomethyne with a mixture of ammonia and hydrogen at a temperature of 60° to 200° C. and at a pressure of 50 to 300 bars in the presence of a hydrogenation catalyst.

4,215,074
PROCESS FOR PREPARING CIS-BICYCLOOCTYLAMINES

David C. Horwell, Farnborough, and Graham H. Timms, Camberley, both of England, assignors to Lilly Industries Limited, London, England

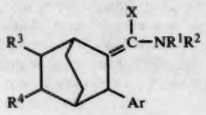
Filed Jun. 18, 1979, Ser. No. 49,672

Claims priority, application United Kingdom, Jul. 15, 1978, 29988/78

Int. Cl.² C07C *83/00*

U.S. Cl. 260—563 P **5 Claims**

4. A compound of formula (II):



(II)

where R^1 and R^2 are C_{1-3} alkyl, Ar is a phenyl group optionally substituted by up to two halogen atoms, R^3 and R^4 are hydrogen or taken together represent a single bond, and X is hydrogen, bromine or chlorine.

4,215,075
KETOXIME CARBAMATES

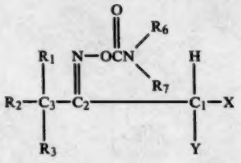
Thomas A. Magee, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 786,974, Apr. 13, 1977, Pat. No. 4,128,581, Ser. No. 786,974, Apr. 13, 1977, Pat. No. 4,128,581, Continuation-in-part of Ser. No. 553,648, Feb. 27, 1975, Ser. No. 553,648, Feb. 27, 1975, Continuation-in-part of Ser. No. 229,207, Feb. 24, 1972, Pat. No. 3,875,232, Ser. No. 229,207, Feb. 24, 1972, Continuation-in-part of Ser. No. 132,584, Apr. 8, 1971, abandoned. This application Dec. 4, 1978, Ser. No. 966,390

Int. Cl.² C07C *131/00*

U.S. Cl. 260—566 AC **10 Claims**

1. A composition of matter having the formula:



where:

R_1=hydrogen, R_2–R_3 or X;

R_2–R_3=lower alkyl, lower alkenyl, or lower alkynyl, with the proviso that R_2 and R_3 may be connected to form a cycloaliphatic ring;

R_6–R_7=hydrogen, lower alkyl, lower akenyl, or lower alkynyl;

X–Y=X and Y may be the same or different and each is selected from the group consisting of SR_8, $S(O)R_8$, SO_2R_8, OR_8, OSO_2R_8, NR_8R_9, NO_2, CN, SCN, N_3, or halogen;

R_8=hydrogen, lower alkyl, lower akenyl, lower alkynyl, or aryl, and

R_9=hydrogen or lower alkyl.

4,215,076
SURFACTANT-PROMOTED ALDOL REACTIONS

Kenneth C. Stueben, Bridgewater, and Mary L. Deem, Bernardsville, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 23, 1976, Ser. No. 679,714

Int. Cl.² C07C *47/02*

U.S. Cl. 568—461 **15 Claims**

1. In the method of condensing aliphatic aldehydes or ketones in the presence of an aqueous base as catalyst to produce an aldol reaction product, the improvement which comprises using as a co-catalyst a neutral or cationic surfactant at a molar concentration of about 10^{-4} to about 10^{-1} based on the mole of said aliphatic aldehydes or ketones.

4,215,077
HYDROFORMYLATION OF OLEFINS

Mitsuo Matsumoto, and Masuhiko Tamura, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jan. 29, 1979, Ser. No. 7,660

Claims priority, application Japan, Feb. 9, 1978, 53/14410; Apr. 14, 1978, 53/44611

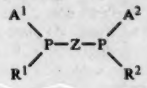
Int. Cl.² C07C *45/10*

U.S. Cl. 568—454 **18 Claims**

1. In a process for producing aldehydes by hydroformylating a lower olefin which comprises ethylene, propylene, 1-butene, isobutene, 1-pentene, allyl alcohol or allyl methyl ether at a temperature within the range of from about room temperature to 130° C., in an organic solvent in the presence of a rhodium complex having the general formula

$$HRh(CO)(PR_3)_3$$

wherein R is alkyl or aryl, or a rhodium carbonyl cluster, employed at a concentration of from 0.1 to 25 mg atoms/1 of reaction mixture, and a trisubstituted phosphine in an amount of from 10 to 500 equivalents per rhodium atom, while maintaining a carbon monoxide partial pressure within the range of 0.1 to 2.5 atmospheres during the progress of the reaction and a ratio of hydrogen partial pressure to that of the carbon monoxide within the range of 1:2 to 5:1, the improvement which comprises adding to the reaction system a diphosphino alkane represented by the general formula



(I)

in an amount of 0.20 to 2.5 equivalents per gram atom of the rhodium present in said rhodium complex, wherein, in the formula, A^1 and A^2 are each aryl, R^1 and R^2 are each aryl or a saturated hydrocarbon residue containing one or more carbon atoms, the aryl groups being selected from the group consisting of unsubstituted phenyl and napthyl groups and phenyl and napthyl groups substituted with lower alkyl groups, and Z is an alkylene radical whose principal chain contains 2 to 5 carbon atoms, said alkylene radical being selected from the group consisting of unsubstituted alkylenes and alkylenes substituted with at least one lower alkyl radical.

4,215,078

PROCESS FOR MANUFACTURING CHLOROPRENE AND 2,3-DICHLOROBUTADIENE-1,3

Chester A. Hargreaves, II, Wilmington, Del.; Alexander T. Harris, Metairie, La., and Robert A. Schulze, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 2, 1979, Ser. No. 26,202
Int. Cl.[2] C07C *21/20*
U.S. Cl. 260—655 8 Claims

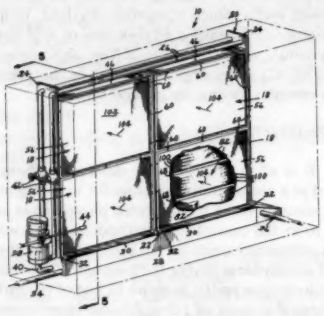
1. In a process for the dehydrochlorination of 3,4-dichlorobutene-1 to chloroprene or of 2,3,4-trichlorobutene-1 or 1,2,3,4-tetrachlorobutane to 2,3-dichlorobutadiene-1,3, the improvement of carrying out the dehydrochlorination with an aqueous solution of a mixture of sodium hydroxide and sodium chloride having the composition of chlor/alkali cell liquor; separating the reaction product mixture into an organic phase and an aqueous phase; recovering the desired product, chloroprene or 2,3-dichlorobutadiene-1,3, from the organic phase; electrolyzing the aqueous phase, consisting essentially of sodium chloride brine, in a chlor/alkali cell to a liquor consisting essentially of an aqueous solution of a mixture of sodium hydroxide and sodium chloride; and recycling the chlor/alkali cell liquor to the dehydrochlorination step.

4,215,079

METHOD AND APPARATUS FOR CONTACTING LIQUIDS AND GASES

Steve Christophersen, Richfield, and Raymond G. Neaman, St. Louis Park, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Mar. 22, 1978, Ser. No. 888,995
Int. Cl.[2] B01F *3/04*
U.S. Cl. 261—36 R 22 Claims



1. A liquid and gas contact apparatus comprising:
(a) a contact body having a plurality of pleated porous media elements, each element being formed in a generally zig-zag configuration with pleats and upper and lower tips;
(b) air passages formed between said pleats, each air passage extending generally in a single straight line direction from an air inlet side to an air outlet side of said contact body;
(c) screen means for supporting said elements one above another in a generally horizontal disposition with all of said air passages being parallel to one another; and
(d) means for supplying water to an uppermost element to saturate all of said elements with water and to establish a downward flow of water through said elements; and
(e) said screen support means leaving a major portion of the generally horizontal cross-section area of said media elements open to permit water flow directly between adjacent vertically spaced media elements directly through substantially the entire cross-section of each media element and each of said media elements having a porosity sufficient to enable substantially all of the water supplied to an uppermost element by said water supply means which flows to a lowermost element to flow directly through the materials of said media elements through substantially the entire cross-section of each media element.

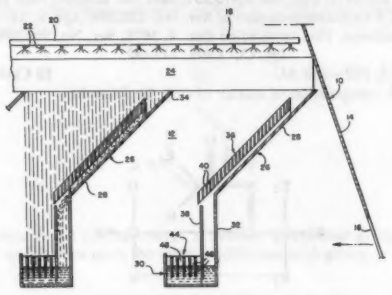
4. A method of cooling and moisturizing air comprising the steps of:
(a) arranging a plurality of pleated porous media elements having pleats and upper and lower tips one above the other with each of said elements being substantially parallel to the other of said elements to create a plurality of parallel passages each of which extends in a generally single straight line direction from an air inlet side to an air outlet side of said elements and with vertically adjacent media elements being substantially open to one another;
(b) supplying water to an uppermost element of said elements to saturate all of said elements with water;
(c) establishing a flow of water from said uppermost element to a lowermost element through each of said elements such that substantially all of the water flowing from the uppermost element to the lowermost element flows directly through substantially the entire cross-section of each element by flowing directly from substantially the entire cross-section area of each one of said media elements directly downward to the one of said media elements supported directly below without creating a film flow of water over and between the elements; and
(d) passing air between the pleats of said elements from an air inlet side to an air outlet side of the elements to evaporate the water saturated in the elements in order to cool and moisturize the air.

4,215,080

LIQUID COLLECTING DEVICE AND USE THEREOF IN LIQUID-GAS CONTACTING APPARATUS

Jean G. Ribier; Maurice J. Dorsemaine, and Bernard J. Sauvage, all of Brussels, Belgium, assignors to Hamon-Sobelco, S.A., Brussels, Belgium

Filed Sep. 20, 1978, Ser. No. 944,178
Claims priority, application France, Oct. 26, 1977, 77 32243
Int. Cl.[2] F28C *1/06*
U.S. Cl. 261—111 3 Claims



1. A device for placing a liquid in contact with a gas, including a chamber, at least one gas inlet opening in the lower part of said chamber and at least one gas outlet opening in its upper part, a liquid-distributing system within said chamber, means for placing the liquid in direct contact with the gas, positioned under the distribution system, liquid receiving devices arranged under said contact means to collect the liquid falling therefrom in the form of droplets or the like, each said receiving device including a vertically inclined wall and a duct extending along the lower edge of the wall, said receiving devices being arranged substantially parallel to one another and slightly overlapping horizontally to prevent any liquid from the contacting means from dropping directly down into said chamber, characterized by the fact that each receiving device

includes a splash-trapping panel positioned slightly above said inclined wall, and covering the major portion of its inclined surface, said panels consisting of vertical partitions delimiting passages therebetween, which are open in the vertical direction;

said receiving device further characterized by the fact that said panel is constituted by a criss-cross system of longitudinal partitions extending substantially parallel to said duct and by transverse partitions extending along the slope of said wall, that said partitions define a plurality of quadrangular structures each open at the top and bottom; that

said panel projects beyond the lower edge of the wall and over said duct; and

that a substantially vertical deflecting plate extends between the lower edge of the panel and a short distance from the bottom of the duct.

4,215,081

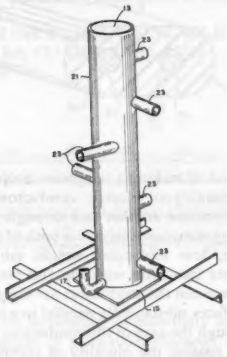
LIQUID AERATOR

Kirtland H. Brooks, 1082 Laurel Dr., Lafayette, Calif. 94549

Filed Jan. 24, 1979, Ser. No. 6,008

Int. Cl.[2] B01D *47/02*

U.S. Cl. 261—122 **7 Claims**



1. An apparatus for aerating a liquid comprising

a tube having an open upper end and submerged substantially vertically in said liquid and filled therewith,

a gas inlet to permit the injection of gas proximate the bottom end of said tube whereby gas bubbles emanating from said gas inlet mix with and rise through said liquid within said tube and cause said liquid therein to also rise through said tube and be discharged out of the upper end thereof, and

means to allow liquid to be continuously drawn into said tube through the sidewall thereof, said means being formed to cause the indrawn liquid to swirl around inside said tube as it mixes with the rising gas bubbles whereby the gas bubble-liquid mixture swirls as it rises through the tube thereby enhancing the aeration of the liquid by prolonging the period of contact between the rising gas bubbles and the liquid and causing greater agitation of the mixture.

4,215,082

DEVICE FOR INJECTING A GAS INTO A LIQUID

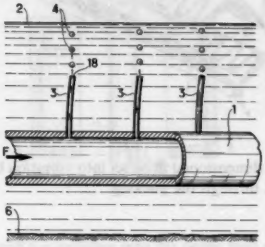
François Danel, Uriage, France, assignor to Societe Anonyme dete: Alsthom-Atlantique, France

Filed Feb. 6, 1976, Ser. No. 655,901

Claims priority, application France, Feb. 25, 1975, 75 05792; Dec. 22, 1975, 75 39259

Int. Cl.[2] B01F *3/04*

U.S. Cl. 261—124 **9 Claims**



1. Apparatus for injecting a gas into a quantity of liquid to provide the treated liquid with a given quality, comprising means for supplying gas to the liquid at a predetermined pressure and having at the place where the injection of the gas is to be effected a wall portion provided with a plurality of holes, a plurality of pipes mounted at one end in the holes of said wall portion and having substantially the remainder of their lengths surrounded by liquid with the other free ends thereof submerged in the quantity of liquid, each of said pipes being thin-walled with a small inside diameter, less than 2 mm, and having a length at least 20 times that of said diameter, the pressure of the gas supplied to said pipes forming at the free ends of said pipes bubbles of a given size, and the flexibility of said submerged pipes being such that the gas supplied therethrough to form the bubbles on the free ends of said pipes imparts to each such free submerged pipe end a slight movement causing the detachment of such bubble from said free pipe end, the gas pressure and the pipe flexibility causing the bubbles to form and be detached regularly and preventing spurious particles adhering to such free ends of the pipes, whereby said pipes regularly and evenly bring the gas into close contact with the treated liquid in the form of discrete gas units of given size.

4,215,083

PACKING OF EQUIPMENT FOR THE PURPOSE OF CONTACTING MAINLY GASEOUS AND LIQUID MEDIUMS

György Fabry, and Istvan Takacs, both of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed Mar. 31, 1978, Ser. No. 892,258

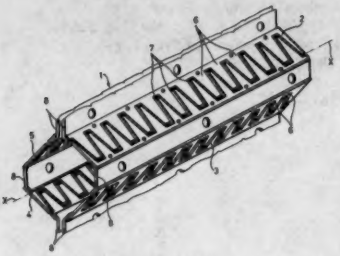
Claims priority, application Hungary, Apr. 27, 1978, RI 628

Int. Cl.[2] B01F *3/04*

U.S. Cl. 261—155 **12 Claims**

1. A column or tower packing adapted to be traversed by at least one fluid which comprises a stack of generally horizontal cells spaced apart vertically and horizontally, each of said cells being formed by two packing members extending transversely to the direction of flow of said fluid, each of said packing members comprising a pair of walls inclined to one another and joined by a third wall, the walls of each pair being dentate and formed with a multiplicity of spaced-apart vibratile elements

interdigitating with but spaced from corresponding vibratile elements of the other member of the respective cell, said ele-



ments being dimensioned to be set into vibration by the passage of said fluid through the packing.

4,215,084

METHOD AND APPARATUS FOR PRODUCING FLAKE PARTICLES

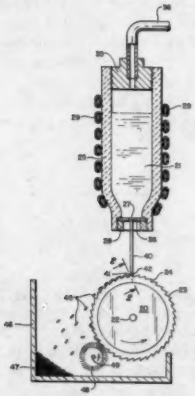
Robert E. Maringer, Worthington, Ohio, assignor to The Battelle Development Corporation, Columbus, Ohio

Filed May 3, 1978, Ser. No. 902,358

The portion of the term of this patent subsequent to May 15, 1996, has been disclaimed.

Int. Cl.[2] B01J *2/02*; B22D *23/08*

U.S. Cl. 264—8 **17 Claims**



1. A method of producing flake particles from molten material, comprising:

(a) rotating a heat-extracting drum having a serrated periphery, with each serration comprising surfaces that meet in an edge substantially parallel to the axis of rotation;

(b) projecting upon said serrated periphery a stream of molten material to form a discrete flake particle on each serration while removing heat from the particle and at least partially solidifying said particle on said serration;

(c) releasing said particle from said serration; and

(d) cooling said particle in a surrounding atmosphere.

4,215,085

PROCESS FOR PREPARING EXTRUDED PELLETED PRODUCTS FROM MOLDING COMPOSITIONS

I. Luis Gomez, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 6, 1978, Ser. No. 957,882

Int. Cl.[2] B29C *23/00*

U.S. Cl. 264—15 **9 Claims**

1. A process for preparing an extruded pelleted molding composition which comprises:

(a) dry blending a nitrile copolymer containing free acrylonitrile monomer with about 0.005 to about 2% by weight based on the weight of the copolymer of a compound selected from the group consisting of unsaturated fatty acid aldehydes, and esters formed by the reaction of a short chain olefinic alcohol with a fatty acid or cyanuric acid, wherein the nitrile copolymer comprises at least about 10% by weight of polymerized acrylonitrile;

(b) melting and extruding the resulting blend; and then

(c) pelletizing the extrudate.

4,215,086

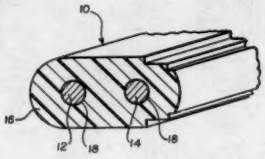
METHOD OF MAKING FLAME RETARDANT EPR UNIPASS TELEPHONE DROP WIRE

Manuel A. Durakis, Brooklyn, N.Y., and John R. Reiser, Piscataway, N.J., assignors to General Cable Corporation, Greenwich, Conn.

Continuation of Ser. No. 831,474, Sep. 8, 1977, abandoned. This application Sep. 25, 1978, Ser. No. 945,332

Int. Cl.[3] B29F *3/10*

U.S. Cl. 264—135 **8 Claims**



7. The method of making a telephone drop wire, including advancing a plurality of electric conductors along parallel paths spaced from one another and through guides in an extruder, extruding simultaneously over both of the conductors a semi-crystalline, low molecular weight ethylene-propylene diene terpolymer insulation with top and bottom surfaces of the insulation between the conductors having generally flat top and bottom surfaces substantially parallel to a center transverse center line through the axes of the conductors of the character described, and passing the plurality of conductors and their extruded covering through a continuous vulcanizer to cure and cross-link the extruded insulation polymer to a thermo-set condition.

4,215,087

DEVICE AND METHOD FOR FORMING AN ANNULAR RAISED RIB ON A TUBULAR MEMBER

Donald W. Mathison, Minneapolis, Minn., assignor to Product Design and Engineering, Inc., Minneapolis, Minn.

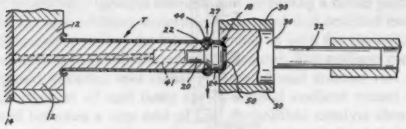
Division of Ser. No. 792,356, Apr. 29, 1977, Pat. No. 4,102,623. This application Jan. 16, 1978, Ser. No. 869,510

Int. Cl.[2] B29C *17/00*

U.S. Cl. 264—320 **1 Claim**

1. The method of forming an annular raised rib on a tubular member consisting in providing a fixed primary mandrel and a secondary mandrel having a frusto-conical formation thereon, then slidably mounting said secondary mandrel on one end of said primary mandrel with the frusto-conical formation in juxtaposition to the one end of the primary mandrel, then

positioning a flexible ring between the frusto-conical formation and the one end of said primary mandrel, then positioning a tubular plastic member upon said primary and secondary mandrels, then heating said primary mandrel, then moving said secondary mandrel toward said primary mandrel to cause said



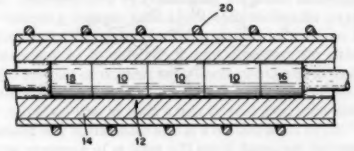
frusto-conical formation to expand the flexible ring radially outwardly of the end of the primary mandrel and against the tubular member to expand the same and form an annular raised rib thereon, then withdrawing the secondary mandrel from the primary mandrel whereby the ring contracts and then ejecting the tubular member from the primary and secondary mandrels.

4,215,088

METHOD FOR FABRICATING BORON CARBIDE ARTICLES

Zane L. Ardary, Oak Ridge, and Carl D. Reynolds, Clinton, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 31, 1978, Ser. No. 956,317
Int. Cl.[2] C04B *35/56, 35/64*
U.S. Cl. 264—332 **3 Claims**



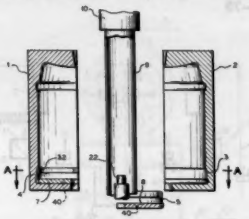
1. A method for fabricating an essentially uniformly dense boron carbide article of a length-to-diameter or width ratio greater than 2 to 1 comprising the steps of providing a plurality of article segments to be joined together to form the article with each of said article segments having a length-to-diameter or width ratio less than 1.5 to 1 and each being fabricated by hot pressing a composition consisting of boron carbide powder at a pressure and temperature effective to provide the article segment with a density greater than about 85% of theoretical density, providing each article segment with parallel planar end surfaces, placing a plurality of said article segments in a hot-pressing die in a line with the planar surfaces of adjacent article segments being disposed in intimate contact, and hot pressing the aligned article segments at a temperature and pressure effective to provide said article with a density over the length thereof in the range of about 94 to 98 percent theoretical density and greater than the density provided in the discrete hot pressing of each of the article segments and to provide a bond between adjacent article segments with said bond being at least equivalent in hardness, strength and density to a remainder of said article.

4,215,089

METHOD FOR BLOW MOLDING HOLLOW ARTICLE WITH INTEGRALLY BONDED ATTACHMENT

Albert R. Uhlig, and Andrew J. Stoll, III, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 821,690, Aug. 4, 1977, Pat. No. 4,140,236.
This application Jul. 20, 1978, Ser. No. 926,181
Int. Cl.[2] B29C *17/07*
U.S. Cl. 264—516 **7 Claims**



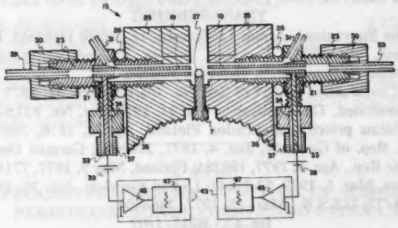
1. In a method for molding into the outer wall of a hollow plastic article a member positioned to surround the periphery of said article, which member has a full ring shape in cross-section, said method inserting such ringshaped member between the facing halves of a blow mold, inserting a hollow parison of soft thermoplastic material between said mold halves, closing said mold halves around said parison and blowing said parison to form a final hollow article having said ring-shaped member peripherally bonded thereto, the improvement which comprises (1) inserting into the halves of the blow mold, separate halves of the ring-shaped member, which halves are adapted to engage each other to form a full ring and (2) forming said full ring during the step of closing said blow mold halves, during which closing the ends of the halves of said ring-shaped member become lockingly engaged to form said full ring.

4,215,090

FLAME IONIZATION DETECTOR

Jack B. Dixon, Georgetown, Tex., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Dec. 18, 1978, Ser. No. 971,941
Int. Cl.[2] G01N *31/12, 25/22, 31/06*
U.S. Cl. 422—54 **15 Claims**



1. A flame ionization detector for a liquid chromatography device having a transport disc within a transport housing with the peripheral portion of the disc being adapted to carry eluents to be detected, said detector comprising:

flame jet means for applying a flame jet toward said peripheral portion of said transport disc within said transport housing at a detection area; and

electrical means connected with said flame jet means to cause current flow through said flame jet for detecting the flame ionization response when compounds to be detected are carried by said disc within said detection area.

4,215,091

METHOD OF DETERMINING THE MASS OF LIQUIDS

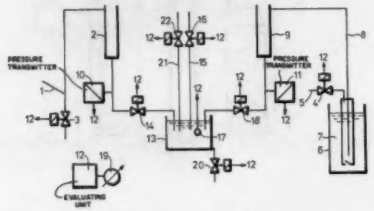
Otto Petersen, Krefeld, and Franz Kersten, Toenisvorst, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 28, 1978, Ser. No. 891,103

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1977, 2716468

Int. Cl.[2] G01N *31/16*

U.S. Cl. 422—75 4 Claims



1. An apparatus for analyzing the concentration of a solution comprising: at least two calibrated precision tubes each having an inlet, an outlet and a precision pressure transmitter disposed at the bottom thereof, one tube receptive of a given amount of solution to be analyzed and the other tube receptive of a titration solution; a titration vessel including means for determining the point of titration therein; means coactive with the pressure transmitter in the one tube for introducing a predetermined mass of solution to be analyzed from the one tube into the titration vessel; and means for introducing titration solution from the other tube into the titration vessel until the point of titration is reached; whereby determination of the concentration of the solution to be analyzed is effected as a function of the output of the pressure transmitter in the other tube.

4,215,092

APPARATUS FOR LIQUID PORTIONING AND LIQUID TRANSFERRING

Osmo Suovaniemi, Armas Lindgrenint.15, 00570 Helsinki, Finland, and Mikko Leskinen, Vantaa, Finland, assignors to Osmo A. Suovaniemi, Helsinki, Finland

Continuation-in-part of Ser. No. 764,170, Jan. 31, 1977, abandoned. This application Jul. 11, 1978, Ser. No. 923,534

Claims priority, application Finland, Apr. 8, 1976, 760957; Fed. Rep. of Germany, Jan. 4, 1977, 2700096; German Democratic Rep., Apr. 6, 1977, 198281; Finland, May 9, 1977, 771459; Japan, Mar. 1, 1977, 52-22141; United Kingdom, Jan. 28, 1977, 3491/77; U.S.S.R., Mar. 25, 1977, 2463804

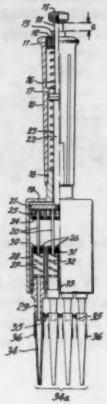
Int. Cl.[2] B01L *3/02*

U.S. Cl. 422—100 5 Claims

1. A tip container element which is detachably connectable to the cone tips of a multichannel pipette, said element comprising

a plurality of hollow truncated conical tip containers, which are linked together in a linear configuration, each of said tip containers having a base portion which is detachably connectable to one of the tip cones of said multichannel pipette; and

connecting means linking said tip containers, said connecting means including two substantially parallel strip-like connecting members of a flexible material and a plurality of cross members extending between said connecting members, the bases of said tip containers being connected



to and extending outwardly respectively from said cross members.

4,215,093

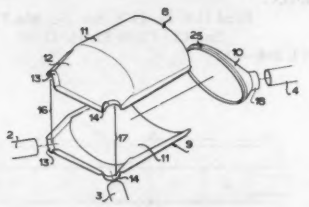
CATALYTIC CONVERTER

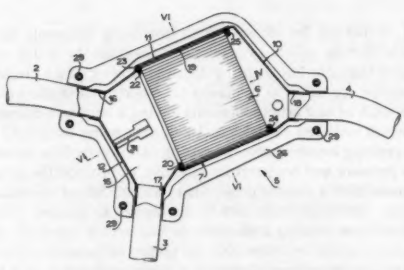
Hiroki Yasuda, Hachioji, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1978, Ser. No. 908,387

Int. Cl.[2] B01J *35/04, 8/02;* F01N *3/15*

U.S. Cl. 422—179 3 Claims





1. A catalytic converter for purifying the exhaust gases of internal combustion engine comprising a shell, said shell comprising a pair of half shells, each of said half shells having an inlet shell and a body shell, said body shells forming a catalyst chamber and said inlet shells forming a tapered inlet chamber, and a funnel-like outlet shell forming an outlet chamber, said outlet shell having a flange projecting radially and axially

inwardly at an inner end thereof, a monolithic catalyst element in said catalyst chamber, resilient mounting means disposed on the periphery of said monolithic catalyst element in said catalyst chamber, said body shells form a shoulder adjacent said inlet shells, said shoulder comprising an annular inwardly directed portion integrally connecting said body shell with said inlet shell of each of said half shells, an annular rim having a substantially L-shaped cross-section disposed at a front end of said monolithic catalyst element and including a radial portion between said resilient mounting means and first resilient means and an axial portion, the latter defining an inlet for the exhaust gases into said monolithic catalyst element, first resilient means disposed between said radial portion of said annular rim and said shoulder of said body shells, second resilient means disposed between a rear end of said monolithic catalyst element and said flange of the outlet shell, said inlet shells defining a pair of inlet ports of said inlet chamber adapted to communicate with upstream exhaust pipes, and said outlet shell forming an outlet port of said outlet chamber adpated to communicate with a downstream exhaust pipe, said outlet shell being engaged with a rear end of said body shells, said flange being engaged with said second resilient means and the rear end of said monolithic catalyst element pressing the latter against said annular rim and said annular rim against said first resilient means, said first resilient means and said annular rim constituting sealing means for sealing a gap between the monolithic catalyst element and said body shells.

4,215,094

METHOD FOR THE REMOVAL OF ORGANIC SUBSTANCES FROM ALKALI METAL ALUMINATE SOLUTION

Jun-ichi Inao; Koichi Yamada; Takuo Harato, and Hisakatsu Kato, all of Niihama, Japan, assignors to Sumitomo Aluminum Smelting Company, Ltd., Osaka, Japan

Filed Feb. 12, 1979, Ser. No. 11,568
Claims priority, application Japan, Feb. 17, 1978, 53/17904
Int. Cl.[2] C01F *7/06, 7/46*
U.S. Cl. 423—123 **11 Claims**

1. A method for removing organic substances from an alkali aluminate solution in the production of alumina from alumina-containing ores by the Bayer process or improved processes thereof, characterized by contacting the alkali aluminate solution containing organic substances with molecular oxygen gas or a molecular oxygen-containing gas of at least an amount corresponding to an oxygen amount necessary for oxidizing a required amount of organic substances contained in said aluminate solution under a pressure of 20 to 150 kg/cm^2 and under such conditions that at least a pair of said aluminate solution is maintained in a liquid state and at a temperature of 180° to 300° C. in the presence of at least 100 mg/l, based on the amount of said aluminate solution of copper ions, thereby oxidizing the organic substances, adding to the resultant aluminate solution a chemical substance, which reacts with the copper ions to form a water-insoluble precipitate, precipitating the water-insoluble precipitate and separating the produced preciptate from the aluminate solution, and recycling the separated precipitate as a copper source to the above oxidation step.

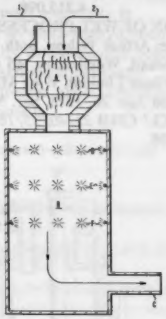
4,215,095

PROCESS FOR THE INCINERATION OF CHLORINATED ORGANIC MATERIALS

Alexander T. Harris, Metairie, La., and Charles R. Putman, New Albany, Ind., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 23, 1978, Ser. No. 954,297
Int. Cl.[2] B01D *53/34*
U.S. Cl. 423—240 **7 Claims**

1. A process for the incineration of chlorinated organic materials containing about 20–70% of chlorine, wherein air and said materials are continuously introduced into the combustion zone of an incinerator whose walls are maintained at a temperature of about 800°–1500° C.; the gaseous combustion products are introduced into a quench zone which is cooled by aqueous hydrochloric acid spray; and at least one C_1–C_4 hydrocarbon gas is injected into the guench zone at one or more points where the temperature is within the range of approximately 450°–1000° C.; the amount of air introduced into the combustion zone being such that there is an excess of oxygen of about 1–40% over the theoretical quantity required to fully burn the organic materials by converting all carbon atoms to carbon dioxide, allowing all chlorine atoms and sufficient hydrogen atoms to combine to hydrogen chloride, and con-



verting all hydrogen atoms remaining after formation of hydrogen chloride to water; and the amount of hydrocarbon that is injected into the quench zone is expressed by the equation $Z-Y\cdot m/n$, where Z is the volume percent of the hydrocarbon based on the volume of air fed into the combustion zone, and Y is an empirical value, within the range of 0.2 to 2.0; m is the volume percent of oxygen in the quench zone based on all the gases present in the quench zone but excluding water vapor and hydrogen chloride gas; and n is the number of atoms of hydrogen in the hydrocarbon molecule.

4,215,096

REMOVAL OF ACIDIC CONTAMINANTS FROM GAS STREAMS BY CAUSTIC IMPREGNATED ACTIVATED CARBON

Rabindra K. Sinha, Coraopolis; Charles K. Polinsky, Pittsburgh; S. David Cifrulak, Oakdale, and Norman J. Wagner, Pittsburgh, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Nov. 9, 1978, Ser. No. 959,137
Int. Cl.[2] B01D *53/34*
U.S. Cl. 423—241 **2 Claims**

1. A process for the removal of chlorine from gas streams which comprises contacting the gas stream with activated carbon impregnated with about 0.5 to about 20 percent by weight sodium hydroxide and about 4 to about 50 percent by weight of moisture.

4,215,097

PROCESS FOR THE MANUFACTURE OF SODIUM PERBORATE MONOHYDRATE AND PRODUCT THEREOF

Jean Brichard, Vilvoorde, and Jean-Claude Colery, Brussels, both of Belgium, assignors to Interox, Brussels, Belgium

Continuation-in-part of Ser. No. 737,686, Nov. 1, 1976, Pat. No. 4,115,519. This application Apr. 10, 1978, Ser. No. 895,273
Claims priority, application Luxembourg, Apr. 8, 1977, 77094
The portion of the term of this patent subsequent to Apr. 19, 1995, has been disclaimed.
Int. Cl.[2] C01B *15/12*
U.S. Cl. 423—279 **15 Claims**

1. Process for the production of sodium perborate monohydrate in granular form and resistant to abrasion, in which an

aqueous solution containing hydrogen peroxide and an aqueous solution containing sodium metaborate are introduced simultaneously into a fluidized bed dryer containing seeds of dimensions smaller than the granules which are to be obtained, and the excess water present in the said aqueous solutions is evaporated by means of a fluidizing gas which is introduced into the fluidized bed dryer, comprising: introducing at least one surface active agent into at least one of the aqueous solutions containing hydrogen peroxide and sodium metaborate.

4,215,098

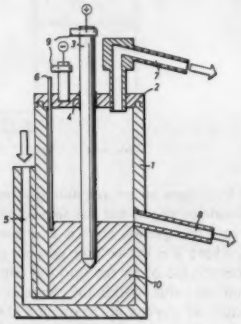
PURIFICATION OF WET PROCESS PHOSPHORIC ACID

Edward J. Lowe; Arthur Wilson, both of Stourbridge, and Michael W. Minshall, Wombourne, all of England, assignors to Albright & Wilson Limited, West Midlands, England

Filed Apr. 26, 1978, Ser. No. 899,896

Int. Cl.[2] C01B *25/40, 25/16;* B01D *1/00*

U.S. Cl. 423—305 **25 Claims**



1. A method for the production of phosphatic derivatives of wet process phosphoric acid which comprises heating wet process phosphoric acid in carbon apparatus to evaporate water therefrom to leave a concentrated acid by direct electrical resistance heating by passing an alternating current through said wet process acid, until the concentration of said concentrated acid is above 80% by weight P_2O_5, precipitating solid impurities from said concentrated acid and separating the precipitated impurities.

4,215,099

AMMONIA SYNTHESIS PROCESS

Alwyn Pinto, and Stanley A. Ward, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 7, 1977, Ser. No. 849,359

Claims priority, application United Kingdom, Nov. 15, 1976, 47450/76

Int. Cl.[2] C01C *1/04*

U.S. Cl. 423—360 **6 Claims**

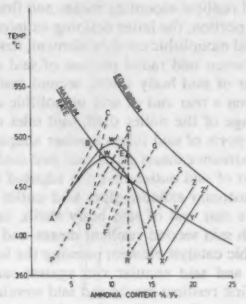
1. A process for carrying out the gas phase catalytic synthesis of ammonia utilizing a reactor having a first catalyst zone within a plurality of tubes around which there is a coolant circulation space, and having immediately downstream of that first catalyst zone an adiabatic catalyst zone; said process comprising the step of:

(a) disposing an ammonia synthesis catalyst in the reactor first catalyst zone;

(b) passing a gas mixture containing nitrogen and hydrogen and residual ammonia through the reactor coolant circulation space so as to heat the gas to a temperature in the range 350°–430° C.;

(c) passing the thus heated gas through the first zone, reacting it therein to produce ammonia, and controlling the rate of feed of the gas mixture containing nitrogen and hydrogen through the space so that the temperature in the first zone (i) rises to a temperature which is 540°–580° C. when the residual ammonia content is 3% v/v, 400°–450° C. when the residual ammonia content is 20% and at corresponding interpolated levels between these residual ammonia contents and (ii) falls as that the reacted gas leaves the said first zone at under 400° C.;

(d) passing the effluent of the first catalyst zone into the



adiabatic catalyst zone and reacting it therein so as to produce further ammonia and increase the temperature to 420°–480° C.; and

(e) passing the effluent of the said adiabatic zone, without any further catalytic ammonia synthesis or heat exchange, through a high grade heat recovery zone affording an external heat recovery of steam at a pressure over 30 atm. abs.

4,215,100

METHOD OF PRODUCING POTASSIUM SULFATE

Igor D. Sokolov, Zanevsky prospekt, 32, kv. 200; Vera A. Ostanina, ulitsa Morisa Toreza, 20, kv. 61; Jury S. Safrygin, ulitsa Dekabristov, 29, kv. 36; Tatyana I. Rutkovskaya, ulitsa Artilleriiskaya, 1, kv. 684; Nina V. Antonova, ulitsa Chekistov, 44, kv. 103, and Rakhil E. Naginskaya, ulitsa Sofiiskaya, 26, kv. 32, all of Leningrad, U.S.S.R.

Filed May 18, 1978, Ser. No. 907,284

Int. Cl.[2] C01D *5/08*

U.S. Cl. 423—552 **1 Claim**

1. A cyclic method of producing potassium sulfate consisting of the steps of

(1) subjecting sodium sulfate to conversion with potassium chloride in an aqueous medium to yield a precipitate of $K_6Na_2(SO_4)_4$ and a first mother liquor;

(2) subjecting the precipitated $K_6Na_2(SO_4)_4$ to conversion with aqueous potassium chloride to yield a precipitate of K_2SO_4 and a second mother liquor;

(3) returning said second mother liquor to step (1);

(4) cooling said first mother liquor from step (1) at temperatures ranging from $+3°$ to $-8°$ C. to yield a precipitate of $Na_2SO_4.10H_2O$ and a third mother liquor;

(5) evaporating said third mother liquor from step (4) to obtain solid sodium chloride and a fourth mother liquor;

(6) mixing said $Na_2SO_4.10H_2O$ from step (4) with said fourth mother liquor from step (5) to produce a suspension of $K_6Na_2(SO_4)_4$; and

(7) returning the suspension of $K_6Na_2(SO_4)_4$ from step (6) to the aqueous medium in step (1).

4,215,101

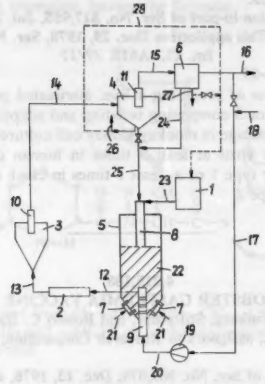
METHOD AND APPARATUS FOR PERFORMING CHEMICAL AND/OR PHYSICAL TREATMENTS

Ernst Kriegel; Dietrich Radke, both of Essen; Hans Klein, and Carlos Arbeletche, both of Beckum, all of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Fed. Rep. of Germany

Filed Jun. 13, 1978, Ser. No. 915,225

Int. Cl.[2] B01D *53/34*

U.S. Cl. 423—659 19 Claims



1. In a method of performing a treatment of a dust cloud, including the successive steps of generating the dust cloud from a gas and from solid particles, passing the dust cloud through a reaction zone, separating the dust cloud into its gaseous and solid components in a separator and reintroducing at least one part of at least one separated component into the dust cloud; the improvement comprising the step of introducing, prior to the dust cloud generating step, the solid particles into a height-adjustable solids column which seals the separator from the gas used in the dust cloud generating step and which, dependent from its height, controls the concentration of solids in the dust cloud.

4,215,102

CYTOCHEMICAL AGENTS AND METHODS FOR THE DETECTION OF STEROID HORMONE RECEPTORS IN HUMAN TISSUES

Sin H. Lee, 53 Milan Rd., Woodbridge, Conn. 06525

Continuation-in-part of Ser. No. 947,700, Sep. 29, 1978, abandoned, and a continuation-in-part of Ser. No. 876,564, Feb. 10, 1978, abandoned. This application Jan. 5, 1979, Ser. No. 1,205

Int. Cl.[2] C07G *7/00, 15/00*

U.S. Cl. 424—3 17 Claims

1. An agent useful for the detection of steroid hormone receptor malignant cells consisting essentially of a molecular conjugate of the formula

[hormone]—[A]—[carrier]—[fluorochrome]

wherein

(a) said [hormone] is a steroidal molecular unit covalently-bonded to —A—,

(b) said —A— is a covalently-bonded chemical linkage, and

(c) said carrier is a polyamino or polyhydroxyl hydrophylic molecular unit capable of covalent-bonding to respectively one or more of the [hormone]—A— entities and also one or more of the fluorochrome dyestuff entities, and

(d) said [fluorochrome] represents at least one dyestuff unit covalently-bonded to said carrier and capable of exhibiting visually observable color under light excitation,

and wherein the average molecular ratio of said fluorochrome dyestuff to said hormone is between about 2:1 and 1:50, and said [hormone] component of said conjugate has a concentration of about at least 10^{-2} M to 10^{-5} M in an aqueous solution at a physiological pH.

17. A method for the detection and identification of suspected carcinoma tissue cells having steroidal hormone receptor characteristics, which tissues have been excised, frozen and dried in section and maintained in a chemically-unfixed condition, which method consists essentially in

(1) treating said tissue section by rehydration in a phosphate-buffered substantially isotonic saline solution, having an approximately physiological pH range;

(2) coating said thus treated tissue section with a molecular conjugate of the formula

(hormone)—(A)—(carrier)—(fluorochrome)

wherein

(a) said (hormone) is a steroidal molecular unit covalently-bonded to —A—,

(b) said —A— is a covalently-bonded chemical linkage, and

(c) said carrier is a polyfunctional hydrophilic molecular unit capable of covalent-bonding to respectively one or more of the (hormone)—A— entities and also one or more of the fluorochrome dyestuff entities, and

(d) said (fluorochrome) represents at least one dyestuff unit covalently-bonded to said carrier and capable of exhibiting visually observable color under light excitation,

and wherein the average molecular ratio of said fluorochrome dyestuff to said hormone is between about 2:1 and 1:50, and the conjugately-bound steroid hormone can have a concentration of about 10^{-2} M to 10^{-5} M in an aqueous solution of a physiological pH;

(3) thereafter removing said molecular conjugate coating from said tissue specimen, and rinsing the same in a phosphate-buffered substantially isotonic saline solution having an approximately physiological pH range; and thereafter examining the thus-processed tissue specimen for the presence of appearance of fluorescent dye staining of the cells therein.

4,215,103

METHOD FOR PRODUCING A PREPARATION FOR DIAGNOSTIC RADIOLOGY AND APPARATUS THEREFOR

Arthur R. Millington, Blackburn, England, assignor to Linton Medical Services Limited, Blackburn, England

Filed Feb. 1, 1978, Ser. No. 874,154

Claims priority, application United Kingdom, Feb. 2, 1977, 4319/77

Int. Cl.[2] B61K *29/02;* A67D *5/62*

U.S. Cl. 424—4 9 Claims

1. A method of producing a preparation for diagnostic radiology, the preparation, when taken into the body of a user, releasing a gas that expands within the body of a user, comprising:

placing a mixture containing a radio opaque substance and a carrier in a pressure vessel, the radio opaque substance being present in a quantity sufficient for diagnostic radiology;

adding a non-toxic gas to the pressure vessel; and

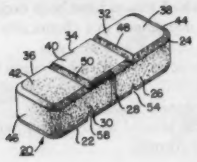
cycling the gas and mixture for a period of time sufficient to obtain a predetermined level of dissolved gas within the mixture, the level being sufficient to cause release of the gas within the body of a user.

4,215,104

MULTI-FRACTIONABLE TABLET STRUCTURE

Michael K. Ullman; Stephen T. David, and Claude E. Gallian, all of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Mar. 26, 1979, Ser. No. 24,139
Int. Cl.[2] A61K 9/44
U.S. Cl. 424—15 15 Claims



1. A tablet structure which comprises, an approximately rectangularly-shaped unitary body having oppositely disposed first and second planar surfaces being joined respectively by oppositely disposed vertical end walls relative to a front wall surface and a rear wall surface; said planar surfaces each containing two transverse score markings approximately oppositely positioned and defining approximately equal trisectional dosage units; said front and rear wall surfaces each containing one vertical score marking; each of said vertical score markings being disposed intermediate said two transverse score markings and approximately opposite to each other; whereby the unitary body may be fractured into at least bisectional or trisectional units for consumption.

4,215,105

ANTICALCULUS ORAL COMPOSITION

Abdul Gaffar, and Hollandra P. Niles, both of Somerset, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 27, 1978, Ser. No. 955,558
The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.
Int. Cl.[2] A61K 7/16, 7/18
U.S. Cl. 424—57 8 Claims

1. An oral composition comprising an orally acceptable vehicle containing in an effective amount as an anticalculus agent phosphonoacetic acid or an orally acceptable salt thereof.

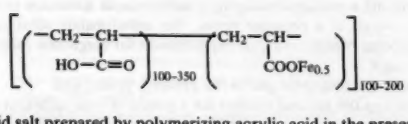
4,215,106

LOCAL HEMOSTATIC

Mikhail G. Voronkov, ulitsa Lermontova, 315, kv. 32; Ada T. Platonova, ulitsa Lermontova, 313, kv. 31; Vladislava Z. Annenkova, ulitsa Maratova, 29, kv. 16; Galina M. Kononchuk, ulitsa Yakobi, 26, kv. 1; Valentina B. Kazimirovskaya, ulitsa Lermontova, 289, kv. 56; Galina S. Ugrjumova, ulitsa Lermontova, 303, kv. 48, and Valentina M. Annenkova, ulitsa Lermontova, 289, kv. 43, all of, Irkutsk, U.S.S.R.

Filed Apr. 7, 1978, Ser. No. 894,248
Int. Cl.[2] A61K 31/78, 31/295
U.S. Cl. 424—81 2 Claims

1. A local hemostatic composition comprising, as active ingredient, a hemostatically effective amount of a water soluble incomplete salt of a polyacrylic acid of the formula



said salt prepared by polymerizing acrylic acid in the presence of an reduction-oxidation system, $FeSO_4.(NH_4)_2SO_4.6H_2O/K_2S_2O_8$, to yield a salt having an iron content of 0.1–0.3%, said active ingredient being present in an amount of from 1 to 2% by weight in a pharmaceutical carrier.

4,215,107

PARAINFLUENZA VIRUS VACCINE AND ITS PREPARATION

Eugene B. Buynak, North Wales, and Maurice R. Hilleman, Lafayette Hill, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 817,955, Jul. 22, 1977, abandoned. This application Dec. 29, 1978, Ser. No. 974,396
Int. Cl.[2] A61K 39/12
U.S. Cl. 424—89 13 Claims

1. A process of preparing a live, attenuated parainfluenza virus types 1 or 3 comprising isolating and adapting the virus by at least 1 passage in monkey kidney cell culture and serially passaging the virus at least 3 times in human diploid lung fibroblasts for type 1 or at least 3 times in chick embryo cell culture for type 3.

4,215,108

LOBSTER GAFFKEMIA VACCINE

James H. Rittenburg, Stillwater, and Robert C. Bayer, Orono, both of Me., assignors to Research Corporation, New York, N.Y.

Continuation of Ser. No. 969,078, Dec. 13, 1978, abandoned. This application May 18, 1979, Ser. No. 40,296
Int. Cl.[2] A61K 39/02
U.S. Cl. 424—92 10 Claims

1. A method for preparing a vaccine suitable for use in protecting lobsters against gaffkemia, which comprises:

(a) culturing a logarithmic growth phase of the bacteria *Aerococcus viridans* (var. *homari*) in a suitable growth medium containing sources of assimilable complete nutrients for said bacteria;

(b) adding a sublethal, replication-inhibiting amount of an antibiotic effective against said bacteria to said culture and incubating the resultant admixture for a period of time sufficient to accumulate antigens therein protective against gaffkemia infections; and

(c) recovering said protective antigens to form a vaccine containing an immunologically effective amount of said antigens 100% free of said living bacteria and substantially free of in vivo effective amounts of said antibiotic.

4,215,109

MEDICAMENTS FOR THE SUPPRESSION OF PATHOLOGICAL PROCESSES

Gerhard Ruhenstroth-Bauer, Gräfelfing, and Reiner Scherer, Munich, both of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Göttingen, Fed. Rep. of Germany

Filed May 17, 1978, Ser. No. 906,442
Claims priority, application Fed. Rep. of Germany, May 20, 1977, 2722769; Nov. 15, 1977, 2750920
Int. Cl.[2] A61K 37/00
U.S. Cl. 424—177 4 Claims

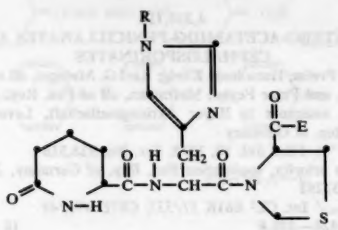
1. A method of suppressing an inflammatory process in a mammal suffering from said process, wherein the inflammatory process is characterized in part by a higher than normal concentration of fibrinogen in the blood plasma of the suffering mammal, which comprises; administering to said mammal an effective amount of a blood plasma protein selected from the group consisting of fibrinogen, fibrinopeptide A and fibrinopeptide B.

4,215,110
METHOD OF TREATING HYPERTENSION

Victor J. Lotti, Royat, France, and Clement A. Stone, Blue Bell, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 822,127, Aug. 5, 1977, abandoned, which is a continuation-in-part of Ser. No. 739,685, Nov. 8, 1976, abandoned. This application Sep. 22, 1978, Ser. No. 944,956
Int. Cl.[2] A61K *37/00*
U.S. Cl. 424—177 11 Claims

1. A method of treating hypertension which comprises administration, to a hypertensive patient, of an antihypertensive amount of a tripeptide, having the formula:



wherein

R is selected from H, —CH_3 and —CH_2—COOH; and

E is —NH_2 and —OCH_3 or a pharmaceutically acceptable salt thereof.

4,215,111
PEPTIDES HAVING UBIQUITIN-LIKE ACTIVITY

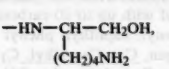
Gideon Goldstein, Short Hills, and George Heavner, Flemington, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Mar. 14, 1979, Ser. No. 20,157
Int. Cl.[2] A61K *37/00;* C07C *103/52*
U.S. Cl. 424—177 19 Claims

1. A peptide possessing ubiquitin-like activity having the formula:

A-B

wherein A is a member selected from the group consisting of deamino GLN, GLN, and $(SAR)_n$-GLN; n is an integer from 1 to 4; and B is a member selected from the group consisting of LYS-OH, LYS-NH_2, decarboxy-LYS,



LYS-SAR-OH and LYS-SAR-NH_2, provided that when A is GLN, B is other than LYS-OH, and the pharmaceutically-acceptable acid addition salts thereof.

4,215,112
TRIPEPTIDES AND METHODS

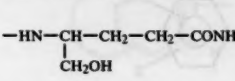
Gideon Goldstein, Short Hills, and George Heavner, Flemington, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Mar. 14, 1979, Ser. No. 20,159
Int. Cl.[2] A61K *37/00;* C07C *103/52*
U.S. Cl. 424—177 16 Claims

1. A polypeptide having the capability of inducing the differentiation of both Th-1^+ T-lymphocytes and Bu-1^+ B-lymphocytes, said polypeptide having the formula:

A—X—B

wherein A is deamino-LYS or LYS; X is a suitable neutral aliphatic amino acid residue selected from the group consisting of SER, ALA, 2-Me-ALA, GLY, LEU, THR, D-SER, D-ALA, D-THR, allo-THR, D-LEU, and SAR; B is GLN-R′, decarboxy-GLN, or



R′ is a member selected from the group consisting of OH, NH_2, NHR″, N(R″)$_2$, OR″, GLY, GLY—GLY, GLY—GLY—SER, and GLY—GLY—SER—ASN; and R″ is a member selected from the group consisting of C_1–C_7 alkyl, C_6–C_{12} aryl, C_6–C_{20} alkaryl, C_6–C_{20} aralkyl, C_2–C_7 alkenyl, and C_2–C_7 alkynyl; and the pharmaceutically acceptable salts thereof.

4,215,113
METHOD FOR COMBATING VIRUS INFECTIONS

Bertil F. H. Eriksson, Södertälje; Ake J. E. Helgstrand, Enhörna; Alfons Misiorny, Bandhagen; Göran B. Stening, and Stig-Ake A. Stridh, both of Södertälje, all of Sweden, assignors to Astra Lakemedel Aktiebolag, Södertälje, Sweden

Filed Jun. 20, 1977, Ser. No. 807,783
Claims priority, application Sweden, Jul. 1, 1976, 7607496
Int. Cl.[2] A61K *31/66*
U.S. Cl. 424—212 17 Claims

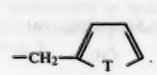
1. A method for the selective treatment of virus infections in an animal or human host comprising administering to said host so infected an amount effective to treat said virus infection of phosphonoformic acid or a physiologically acceptable salt thereof.

4,215,114
ANALGESIC N-[2-(FURYL-METHYLAMINO AND 2-THIENYLMETHYLAMINO)CYCLOALIPHATIC]BENZAMIDES

Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 906,271, May 15, 1978, Pat. No. 4,153,717, which is a division of Ser. No. 741,467, Nov. 12, 1976, Pat. No. 4,098,904. This application Mar. 5, 1979, Ser. No. 17,679
Int. Cl.[2] A61K *31/34, 31/38;* C07D *307/54, 333/24*
U.S. Cl. 424—275 8 Claims

1. A compound of the formula

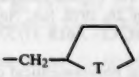


wherein the wavy line (~) at the 1-position of the cycloaliphatic ring denotes trans-stereoconfiguration of the 1-position substituent with respect to the substituent in position 2 of the same cycloaliphatic ring; n is 1 to 8;

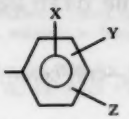
R is hydrogen or C_1 to C_3-alkyl;

R_1 is hydrogen or C_1 to C_3-alkyl; and

R_2 is a group of the formula



wherein T is -O- or -S-; and Q is the radical



wherein one of X, Y and Z is hydroxy, C_1 to C_3-alkyloxy or [C_3 to C_4] C_3 to C_6-(allylic)alkenyloxy and the remainder of X, Y and Z is hydrogen, nitro or halogen having an atomic number of from 9 to 35, and when R is hydrogen and n is 2, and the Q moiety is distributed, X is hydrogen, and Y and Z cannot be any combination of C_1 to C_3-alkyloxy, nitro or hydroxy, and when R is hydrpgen and n is 2, and Q is monosubstituted, X and Y are hydrogen and Z is [C_3 to C_4] C_3 to C_6-(allylic)alkenyloxy and when X is hydroxy, at least one of Y and Z is a halogen having an atomic number of from 9 to 35, and when n is 1, R must be C_1 to C_3-alkyl, and the pharmacologically acceptable salts thereof.

7. A method for alleviating pain in a warm-blooded animal which comprises administering to the warm-blooded animal suffering pain a compound of claim 1 in an amount effective to relieve the pain.

4,215,115

NEMATICIDAL PHOSPHORODITHIOATE

Carmine P. DiSanzo, Medina, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

Filed Nov. 24, 1976, Ser. No. 744,535
Int. Cl.[2] A01N *9/36*
U.S. Cl. 424—216 **1 Claim**

1. A method of combating nematodes which comprises applying to the locus where nematodes are to be controlled a nematicidally effective amount of O,O-diethyl S-(tert-butylthiomethyl) phosphorodithioate.

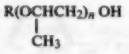
4,215,116

PROPOXYLATE TOXICANTS

Myron J. Lover, Mountainside; Arnold J. Singer, S. Orange, and Donald M. Lynch, Waldwick, all of N.J., assignors to Block Drug Company Inc., Jersey City, N.J.

Filed Jun. 30, 1978, Ser. No. 920,808
Int. Cl.[2] A01N *9/00, 9/24, 9/36*
U.S. Cl. 424—217 **11 Claims**

1. A method of controlling ectoparasites or their ova which comprises applying to a host in need of such control an effective toxic amount of at least one polyoxypropylene glycol derivative selected from the group consisting of; ethers of the formula



wherein R is a 1 to 18 carbon atom alkyl group and n is a number such that the propoxy groups constitute 40 to 90% of said ether and the phosphates of said ethers.

4,215,117

STABLE PHARMACEUTICAL FORMULATIONS

Ashok C. Shah, and Edward P. Strzelinski, both of Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed May 26, 1978, Ser. No. 909,924
Int. Cl.[2] A61K *31/535*
U.S. Cl. 424—248.4 **4 Claims**

1. A stable solid oral pharmaceutical composition in capsulated unit dosage form useful for combating anxiety which comprises:

(1) an amount of ketazolam effective for combating anxiety in a patient to whom said composition is administered; and

(2) powdered, edible vegetable oil, characterized as follows:

(a) said oil is neutral, exhibiting an acid value of less than 0.4 percent;

(b) said oil is low in ash content;

(c) said oil is without metal contamination;

(d) said oil contains less than 0.1 percent moisture and other volatiles; and

(e) said oil will pass through a screen of 325 mesh to the extent of about 95 percent.

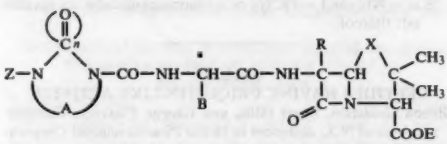
4,215,118

2-HETERO-ACETAMIDO-PENICILLANATES AND CEPHALOSPORINATES

Michael Preiss; Hans-bodo König; Karl G. Metzger, all of Wuppertal, and Peter Feyen, Mettmann, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 10, 1978, Ser. No. 923,518
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1977, 2732283
Int. Cl.[2] A61K *31/535;* **C07D** *499/44*
U.S. Cl. 424—248.4 **18 Claims**

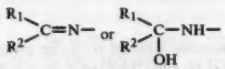
1. A compound of the formula



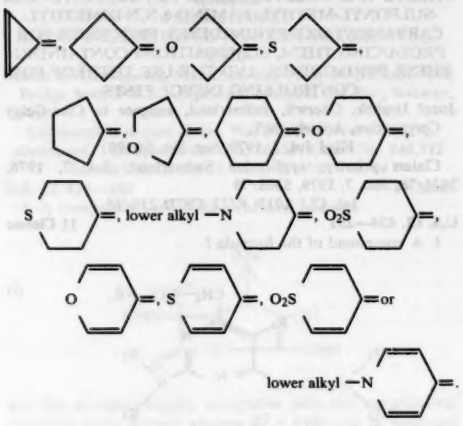
a pharmaceutically usable salt thereof or a hydrate thereof, in which

R is hydrogen or lower alkoxy,

Z is



R_1 and R_2 each independently is hydrogen; alkyl or alkenyl with up to 6 carbon atoms; cycloalkyl, cycloalkenyl or cycloalkadienyl with up to 10 carbon atoms; phenyl—C-1-4—alkyl; phenyl; naphthyl; phenyl or naphthyl substituted by halogen, C_1—C_4—alkyl, C_1–C_4—alkoxy, nitro, cyano, C_1–C_4—alkylsulphonyl or CH_3COO; heterocyclyl selected from the group consisting of thienyl, furyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, pyrrolyl, imidazolyl, pyrazolyl, oxdiazolyl, thiadiazolyl, triazolyl, oxtriazolyl, thiatriazolyl, tetrazolyl, pyridyl, pyrazinyl, pyrimidinyl, tetrahydrofuranyl, dioxanyl, pyrrolidinyl, piperidinyl, morpholinyl, pyron-2-yl and pyron-4-yl, the heterocyclyl being unsubstituted or substituted by lower alkyl, trifluormethyl, halogen, amino, lower alkyl-amino, dilower alkylamino, formylamino, acetylamino, CH_3O-CONH, C_2H_5OCONH, CH_3SO_2NH, hydroxyl, methoxy, ethoxy, methylthio, ethylthio, CH_3SO_2, CH_3SO, HOOC, HO_3S, HCO, lower alkyl-CO, lower alkoxy-CO or CN attached to a carbon atom of the ring, or substituted by lower alkyl, CN, CHO, lower alkyl-COO, NH_2-CO, lower alkyl-NH-CO, lower-alkyl-CO attached to a nitrogen atom of the ring; carboxyl; methoxycarbonyl; ethoxycarbonyl; cyano; nitro; lower alkylcarbonyl; $CONH_2$; $CONHCH_3$; $CON(CH_3)_2$; SO_2NH_2; SO_2-$NHCH_3$ or $SO_2N(CH_3)_2$; or R_1 and R_2 together with the carbon atom to which they are bonded form a ring of the formula



A is —CH_2—CH_2—; —CH_2—CH_2—CH_2— or

n is 1 or 2;

B is a heterocyclic radical selected from the group consisting of pyrazolyl, imidazolyl, oxazolyl, oxdiazolyl, 2-amino- and 2-oxo-Δ^4-thiazolinyl, tetrazolyl, sudnonyl, furylthienyl, pyrrolyl, thiazolyl, isothiazolyl, isoxazolyl, and thiadiazolyl, said hetero-cyclic radical being unsubstituted or substituted by halogen, C_1–C_6-alkyl, cyano, sulpho or methylsulfonyl;

X is S, O, SO, SO_2 or CH_2; and

E is hydrogen, a pharmaceutically usable salt-forming cation or a conventional protective group.

15. A method of combating bacterial diseases in human and non-human animals which comprises administering to the animals an antibacterially effective amount of a compound according to claim **1**.

4,215,119

AMINOALKYL-SUBSTITUTED BENZIMIDAZOLIDIN-2-ONES

Anton Mentrup, Mainz-Kastel; Kurt Schromm, Ingelheim; Ernst-Otto Renth, Ingelheim; Richard Reichl, Ingelheim; Werner Traunecker, Münster-Sarmshein, and Wolfgang Hoefke, Budenheim, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 773,394, Mar. 2, 1977, Pat. No. 4,154,829. This application Apr. 3, 1979, Ser. No. 26,608

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1976, 2609645

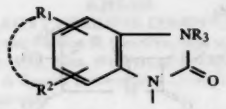
Int. Cl.[2] **A61K** *31/535, 31/415;* **C07D** *235/26*

U.S. Cl. 424—248.5 **6 Claims**

1. A racemic or optically active compound of the formula

Q—C_nH_{2n}—NH—R

wherein Q is



where

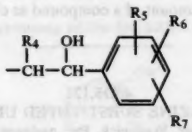
R_1 is hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, trifluoromethyl or amino,

R_2 is hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or trifluoromethyl,

R_1 and R_2, together with each other, are methylenedioxy or ethylenedioxy, and

n is an integer from 2 to 6, inclusive, and

R is hydrogen, benzyl or



where

R_4 is hydrogen, methyl or ethyl,

R_5, R_6 and R_7, which may be identical to or different from each other, are each hydrogen, halogen, hydroxymethyl, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, nitro, cyano, —$CONHR_3$, —CONHOH, —$COOR_3$, R_8O—, methylsulfonylmethyl or, when one or two of the R_5 through R_7 are other than halogen or trifluoromethyl, also —NR_3R_9,

where

R_3 has the meanings defined above,

R_8 is hydrogen, alkanoyl of 1 to 20 carbon atoms, alkyl of 1 to 4 carbon atoms or benzyl, and

R_9 is hydrogen, lower alkanoyl, methanesulfonyl, carbamoyl, dimethylsulfamoyl, or alkoxycarbonyl of 2 to 5 carbon atoms, and

R_5 and R_6, together with each other, are —O—CH_2—O—, —O—CH_2—CH_2—O—, —CH=CH—CH=CH—, —O—CH_2—CONH—, —CH_2—CH_2—CONH— or —O—CO—NH—,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

6. The method of dilating the blood vessels or relieving depression in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective vasodilating or anti-depressant amount of a compound of claim **1**.

4,215,120

PENICILLIN ESTERS AND THEIR PREPARATION

Harry Ferres, Epsom, England, assignor to Beecham Group Limited, England

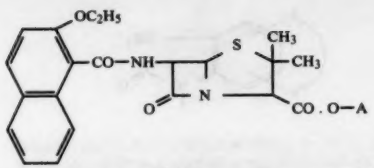
Filed Jul. 10, 1978, Ser. No. 922,978

Claims priority, application United Kingdom, Jul. 14, 1977, 29583/77

Int. Cl.[2] **A61K** *31/50, 31/43;* **C07D** *499/44*

U.S. Cl. 424—250 **9 Claims**

1. An ester of formula (II) or a pharmaceutically acceptable acid addition salt thereof:



(II)

wherein A is a C_1–C_6 alkylene group substituted with one or two groups of formula $—NR^1R^2$ and optionally further substituted with one or more methyl or ethyl groups, wherein R^1 and R^2 are the same or different and each is a C_1–C_6 alkyl group or R^1 and R^2 together with the nitrogen atom to which they are attached form a saturated 5- or 6-membered heterocyclic ring.

9. An antibacterial pharmaceutical composition comprising a pharmaceutical carrier or excipient together with an antibacterially effective amount of a compound as claimed in claim 1.

4,215,121

PYRAZINE SUBSTITUTED UREAS

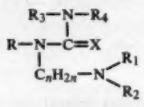
William A. Bolhofer, Frederick, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 769,475, Feb. 17, 1977, Pat. No. 4,144,338. This application Nov. 8, 1978, Ser. No. 959,021

Int. Cl.[2] C07D *241/26;* A61K *31/495*

U.S. Cl. 424—250 **5 Claims**

1. A compound having the formula:



wherein R is a pyrazine ring, which may be optionally substituted with from 1 to 3 of loweralkyl, halo, hydroxy, amino, mono or di-loweralkylamino, loweralkoxy or phenylloweralkoxy;

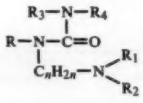
R_1 and R_2 are independently loweralkyl;

R_3 and R_4 are independently hydrogen or loweralkyl;

X is oxygen or sulfur; and

n is an integer of from 2 to 6, such that the direct linkage between the nitrogen atoms is either two or three carbon atoms, and the pharmaceutically acceptable acid addition salts thereof.

5. A composition for the inhibition of gastric acid secretion which comprises an inert carrier and an effective amount of a compound having the formula:



wherein R is a pyrazine ring which may be optionally substituted with from 1 to 3 of loweralkyl, halo, hydroxy, amino, mono or di-loweralkylamino, loweralkoxy, or phenyl loweralkoxy; and

R_1 and R_2, are independently loweralkyl;

R_3 and R_4 are independently hydrogen or loweralkyl; and

n is an integer of from 2 to 6, such that the direct linkage between the nitrogen atoms is either two or three carbon atoms, and the pharmaceutically acceptable acid addition salt thereof.

4,215,122

4-ALKYL- AND 4-ALLYL-MERCAPTO-, -SULFINYL- AND -SULFONYL-METHYL-2-AMINO-6-N,N-DIMETHYL-CARBAMOYLOXY-PYRIMIDINES, PROCESSES FOR PRODUCING THEM, COMPOSITIONS CONTAINING THESE PYRIMIDINES, AND THE USE THEREOF FOR CONTROLLING INSECT PESTS

Jozef Drabek, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsely, N.Y.

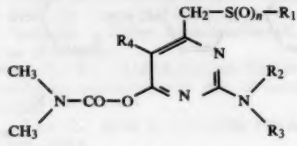
Filed Jul. 2, 1979, Ser. No. 54,195

Claims priority, application Switzerland, Jul. 7, 1978, 7424/78; Jun. 7, 1979, 5308/79

Int. Cl.[2] A01N *9/22;* C07D *239/48*

U.S. Cl. 424—251 **11 Claims**

1. A compound of the formula I



(I)

wherein R_1 is C_1–C_4-alkyl or allyl, R_2 is hydrogen, methyl, or ethyl, R_3 is methyl, ethyl or cyclopropyl, R_4 is hydrogen or methyl and n is zero or the integer 1 or 2.

9. An insecticidal composition comprising an insecticidally effective amount of a compound as claimed in claim 1, together with an inert, solid or liquid diluent or carrier therefor.

4,215,123

ANTISECRETORY 4-OXY-3-CARBOXY OR CYANO-1,2-DIHYDRO-2-OXO-1,8-NAPHTHYRIDINE DERIVATIVES

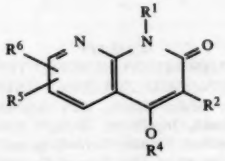
Anthony C. Scotese, King of Prussia, and Arthur A. Santilli, Havertown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed May 7, 1979, Ser. No. 36,921

Int. Cl.[2] A61K *31/435*

U.S. Cl. 424—256 **17 Claims**

1. A process for treating peptic ulcer disease which comprises orally or parenterally administering to a mammal in need thereof an anti-secretory amount of a compound of the formula:



in which

R^1 is hydrogen, alkyl of 1 to 6 carbon atoms, aralkyl of 7 to 9 carbon atoms, or alken-(3,4,5 or 6)-yl of 3 to 6 carbon atoms;

R^2 is hydrogen, alkoxycarbonyl of 2 to 7 carbon atoms; carboxy, carbamyl, N-alkylcarbamyl of 2 to 7 carbon atoms, N-alkoxyethylcarbamyl of 4 to 9 carbon atoms, hydrazido or cyano;

R^4 is hydrogen, alkyl of 1 to 6 carbon atoms;

R^5 and R^6 are independently hydrogen or alkyl of 1 to 6 carbon atoms

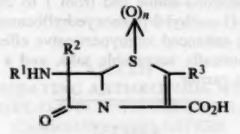
or a pharmaceutically acceptable alkali metal salt thereof.

4,215,124
6 SUBSTITUTED AMINO-2-SUBSTITUTED-PEN-2-EM-3-CARBOXYLIC ACID

Burton G. Christensen, Metuchen, and Frank P. DiNinno, Old Bridge, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 852,274, Nov. 17, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 948,712
Int. Cl.[2] A61K *31/43;* C07D *277/02, 499/44*
U.S. Cl. 424—263 3 Claims

1. A compound having the structural formula:



and the pharmaceutically acceptable salts and conventional penicillin esters thereof wherein R^2 is hydrogen or methoxyl and R^1 is hydrogen or a conventional penicillin acyl group; n is 0 or 1; and R^3 is hydrogen —R, —OR, —SR, $—NR_2$; wherein R is substituted or unsubstituted: alkyl having 1–6 carbon atoms, phenyl, phenylalkyl having 7–12 carbon atoms, heterocyclyl and heterocyclylalkyl wherein the alkyl has 1–3 carbon atoms and the heterocycle has 1–4 hetero atoms selected from O, N and S; and wherein the chain or nuclear substituent on R is selected from amino, mono-, di- and trialkylamino (each alkyl having 1–6 carbon atoms, mercapto, alkylthio having 1–3 carbon atoms, phenylthio, sulfamoyl, amidino, guanidino, nitro, chloro, bromo, fluoro, cyano and carboxyl; when R^2 is hydrogen and n=0, R^3 is not hydrogen or R; when n=1, R^3 is not —SR.

3. An antibiotic pharmaceutical composition comprising an antibacterially effective compound according to claim 1 and a pharmaceutically acceptable carrier therefor.

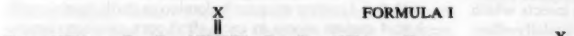
4,215,125
PYRIDYL UREAS, THIOUREAS AND GUANIDINES

Graham J. Durant, and Charon R. Ganellin, both of Welwyn Garden City, England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 770,538, Feb. 22, 1977, which is a division of Ser. No. 640,525, Dec. 15, 1975, Pat. No. 4,025,527, which is a continuation-in-part of Ser. No. 481,716, Jun. 21, 1974, abandoned. This application Jan. 22, 1979, Ser. No. 5,052
Claims priority, application United Kingdom, Jul. 13, 1973, 33428/73; Nov. 12, 1975, 46732/75
Int. Cl.[2] C07D *401/12;* A61K *31/44*
U.S. Cl. 424—263 18 Claims

1. A compound of the formula:

FORMULA I



wherein Het_1 and Het_2, which may be the same or different, are pyridine which is optionally substituted by lower alkyl, hydroxyl, halogen or amino; Z_1 and Z_2 are sulphur or a methylene group; B_1 is $(CH_2)_{n1}$ and B_2 is $(CH_2)_{n2}$; m_1 and m_2 are 0, 1 or 2 and n_1 and n_2 are 2 or 3, provided that the sum of m_1 and n_1 and the sum of m_2 and n_2 are from 2 to 4; and X is sulphur, oxygen or NY wherein Y is hydrogen, cyano, $CONH_2$ or SO_2R_1 wherein R_1 is lower alkyl or phenyl, provided that when X is NH, at least one of Z_1 or Z_2 is sulphur, or a pharmaceutically acceptable acid addition salt thereof.

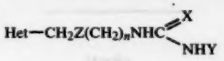
18. A method of inhibiting H-2 histamine receptors which comprises administering to an animal in an effective amount to inhibit said receptors a compound of claim 1.

4,215,126
ALKOXY PYRIDINE COMPOUNDS

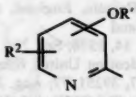
Graham J. Durant; Charon R. Ganellin, both of Welwyn Garden City, and George S. Sach, Welwyn, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, Great Britain

Division of Ser. No. 869,075, Jan. 13, 1978, Pat. No. 4,154,838, which is a division of Ser. No. 704,877, Jul. 13, 1976, Pat. No. 4,083,983. This application Feb. 21, 1979, Ser. No. 13,579
Claims priority, application United Kingdom, Jul. 31, 1975, 31970/75
Int. Cl.[2] C07D *213/63;* A61K *31/44*
U.S. Cl. 424—263 16 Claims

1. A compound of the formula:



wherein Het is a grouping of the formula:



wherein R′ is lower alkyl or $—(CH_2)_pA$ where p is 2 to 4 and A is hydroxy, lower alkoxy or dimethylamino; R^2 is hydrogen, lower alkyl, lower alkoxy, amino, halogen or methylamino; or —OR′ and R^2 can together form a $—O(CH_2)_qO—$ group attached to adjacent carbon atoms on the pyridine ring, where q is 1 to 4; Z is sulphur or methylene; n is 2 or 3; X is $CHNO_2$; Y is hydrogen, lower alkyl or 2-hydroxyethyl; or a pharmaceutically acceptable acid addition salt thereof.

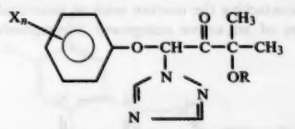
16. A method of blocking histamine H_2-receptors which comprises administering orally or parenterally to an animal in need of blocking of said receptors in an effective amount to block said receptors a compound of claim 1.

4,215,127
SUBSTITUTED 1-PHENOXY-1-TRIAZOLYL-2-BUTANONE COMPOUNDS AND THEIR USE AS FUNGICIDES

Richard B. Rogers, Concord; Chrislyn M. Carson, and Robert J. Ehr, both of Pittsburg, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

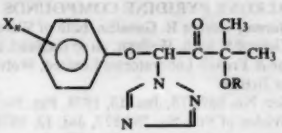
Filed Nov. 2, 1978, Ser. No. 956,956
Int. Cl.[2] A01N *9/22;* C07D *249/08*
U.S. Cl. 424—269 24 Claims

1. A substituted 1-phenoxy-1-triazolyl-2-butanone compound corresponding to the formula



wherein each X independently represents chloro, bromo, iodo, nitro, methyl, methoxy, or methylthio; n represents an integer of 0 to 3; and R represents methyl or ethyl.

17. A method for controlling fungi that attack plants which comprises applying to plants, plant parts, or soil a composition containing as the active ingredient, a fungicidally effective amount of a substituted 1-phenoxy-1-triazolyl-2-butanone compound corresponding to the formula



wherein each X independently represents chloro, bromo, iodo, nitro, methyl, methoxy, or methylthio; n represents an integer of 0 to 3; and R represents methyl or ethyl, in intimate admixture with an inert carrier therefor.

4,215,128

CLAVULANIC ACID DERIVATIVES THEIR PREPARATION AND USE

Thomas T. Howarth, Reigate, England, assignor to Beecham Group Limited, England

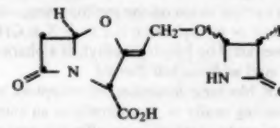
Filed Sep. 14, 1978, Ser. No. 942,410

Claims priority, application United Kingdom, Sep. 20, 1977, 39040/77; Sep. 21, 1977, 39251/77; Aug. 25, 1978, 34593/78

Int. Cl.[2] C07D *498/04*

U.S. Cl. 424—272 **78 Claims**

1. A compound of the formula (IV):



(IV)

or a pharmaceutically acceptable salt or in vivo hydrolyzable ester thereof wherein R_4 is hydrogen or NH.CO.R_5 wherein R_5 is lower alkyl, lower alkoxy, lower alkyl, aryl, aralkyl, aryloxyalkyl or aryloxy.

4,215,129

METHOD FOR THE CONTROL OF MANURE-BREEDING INSECTS

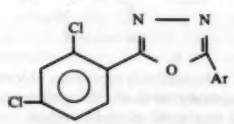
Jack P. Arrington, Clayton, Calif., and Luke L. Wade, Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 1, 1978, Ser. No. 965,546

Int. Cl.[2] A01N *9/22, 9/28;* A61K *31/42*

U.S. Cl. 424—272 **4 Claims**

1. A method for controlling manure-breeding insects which comprises contacting the manure with an insecticidally-effective amount of an active compound corresponding to the formula



wherein Ar represents phenyl, 2-chlorophenyl, 4-fluorophenyl, 4-(trichloromethyl)phenyl, 4-methylphenyl, 4-cyanophenyl, 2,4-dichlorophenyl or 3,5-dichlorophenyl and an inert adjuvant therefor.

4,215,130

ANTIHYPERTENSIVE COMPOSITIONS OF N-(2,6-DICHLOROPHENYL)-4,5-DIHYDRO-1H-IMIDAZOL-2-AMINE AND N-(2-CHLOROETHYL)-N-(1-METHYL-2-PHENOXYETHYL)-BENZENEMETHANAMINE

Albert Sjoerdsma, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

Filed May 31, 1977, Ser. No. 802,027

Int. Cl.[2] A61K *31/135, 31/415*

U.S. Cl. 424—273 R **6 Claims**

1. An antihypertensive composition in dosage unit form comprising from 0.05 to 2 mg of N-(2,6-dichlorophenyl)-4,5-dihydro-1H-imidazol-2-amine and from 1 to 25 mg of N-(2-chloroethyl)-N-(1-methyl-2-phenoxyethyl)benzenemethanamine having an enhanced antihypertensive effect, or each of their pharmaceutically acceptable salts, and a pharmaceutically acceptable carrier.

4,215,131

ANTIMICROBIAL AGENTS

Wolfgang Krämer; Karl H. Büchel; Manfred Plempel, and Ingo Haller, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

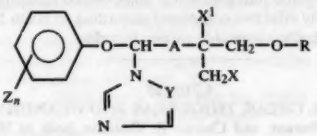
Continuation-in-part of Ser. No. 819,645, Jul. 27, 1977, abandoned. This application Mar. 16, 1979, Ser. No. 21,295

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1976, 2635665

Int. Cl.[2] A01N *9/00, 9/22*

U.S. Cl. 424—273 R **6 Claims**

1. A pharmaceutical composition for oral or parenteral use, free from pathogenic microorganisms which could be harmful to warm-blooded animals, comprising, as an active ingredient, an antimicotically effective amount of at least one compound of the formula



(I)

in which

R represents hydrogen, -CO-R^1 or -SO_2-R^2, wherein

R^1 represents a straight-chain or branched alkyl with 1 to 18 carbon atoms, which is unsubstituted or substituted by halogen, amino, acetylamino, alkoxy with 1 to 4 carbon atoms or by alkoxycarbonyl with 1 to 4 carbon atoms in the alkyl part; alkenyl or alkinyl with 2 to 6 carbon atoms; cycloalkyl with 5 to 7 carbon atoms; phenyl, phenylalkyl or phenoxyalkyl having in each case, 1 to 4 carbon atoms in the alkyl part and being unsubstituted or substituted in the phenyl part by halogen, amino, cyano, nitro or alkyl with 1 to 2 carbon atoms; alkylamino or dialkylamino with 1 to 4 carbon atoms in each alkyl part; or phenylamino which is unsubstituted or substituted by halogen, nitro or cyano;

R^2 represents straight-chain or branched alkyl with 1 to 4 carbon atoms; or phenyl group unsubstituted or substituted by halogen, amino, cyano, nitro or by alkyl with 1 to 2 carbon atoms;

A represents a keto group or a —CH(OH)— grouping,

X represents hydrogen or an —OR grouping, wherein R is as defined above,

X^1 represents alkyl with 1 or 2 carbon atoms or phenyl which is unsubstituted or substituted by halogen, or alkyl with 1 to 2 carbon atoms;

Y represents —CH— or a nitrogen atom,

Z represents halogen; straight-chain or branched alkyl with 1 to 4 carbon atoms; cycloalkyl with 5 to 7 carbon atoms;

halogenoalkyl with 1 or 2 carbon atoms and 1 to 5 halogen atoms; alkoxy or alkylthio with 1 or 2 carbon atoms in each case; alkoxycarbonyl with 1 to 5 carbon atoms; amino; cyano; nitro; phenyl or phenoxy each unsubstituted or substituted by halogen, amino, cyano, nitro or alkyl with 1 to 2 carbon atoms; phenylalkyl with 1 or 2 carbon atoms in the alkyl part, unsubstituted or substituted in the alkyl part by alkylcarbonyl with up to 3 carbon atoms and in the phenyl part by halogen, nitro or cyano; and

n represents 0 or an integer from 1 to 5, or a salt thereof in admixture with a sterile pharmaceutical carrier.

4,215,132
COMBATING ARTHROPODS WITH N,N-DIMETHYL-O-(3-SUBSTITUTED-PYRAZOL-5-YL)-CARBAMIC ACID ESTERS

Fritz Maurer, Wuppertal; Hans-Jochem Riebel, Selters; Rolf Schröder, Wuppertal; Ingeborg Hammann, Cologne, and Bernhard Homeyer, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

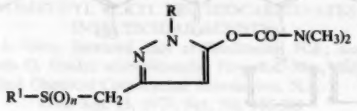
Filed Apr. 18, 1979, Ser. No. 31,096

Claims priority, application Fed. Rep. of Germany, May 6, 1978, 2819932

Int. Cl.² C07D *231/20;* A01N *9/22*

U.S. Cl. 424—273 P **9 Claims**

1. An N,N-dimethyl-O-(3-substituted- pyrazol-5-yl)-carbamic acid ester of the formula



in which

R is hydrogen, alkyl with 1 to 8 carbon atoms or cyanoethyl,

R^1 is alkyl with 1 to 5 carbon atoms, and

n is 1 or 2.

8. A method of combating arthropods which comprises applying to the arthropods, or to a habitat thereof, an arthropodicidally effective amount of a compound according to claim 1.

4,215,133
2-[N-(2'-CHLORO-4'-METHYL-THIENYL-3')-N-(CYCLOPROPYL-METHYL)-AMINO]-2-IMIDAZOLINE AND SALTS THEREOF

Helmut Stähle; Herbert Köppe; Werner Kummer, all of Ingelheim am Rhein, Fed. Rep. of Germany; Walter Kobinger, Vienna, Austria; Christian Lillie, Vienna, Austria, and Ludwig Pichler, Vienna, Austria, assignors to Boehringer Ingelheim GmbH, Ingelheim an Rhein, Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 54,850

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1978, 2830279

Int. Cl.² A61K *31/415;* C07D *409/12*

U.S. Cl. 424—273 R **3 Claims**

1. 2-[N-(Cyclopropyl-methyl)-N-(2'-chloro-4'-methyl-thienyl-3')-amino]-2-imidazoline or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3. The method of slowing the heart rate of a warm-blooded animal in need thereof, which comprises perorally or parenterally administering to said animal an effective bradycardiac amount of a compound of claim 1.

4,215,134
4-HYDROXY-2-BENZIMIDAZOLINE-THIONE COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Carl H. Ross, Viernheim; Walter-Gunar Friebe, Darmstadt; Wolfgang Kampe, Heddesheim; Wolfgang Bartsch, Viernheim, and Egon Roesch, Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

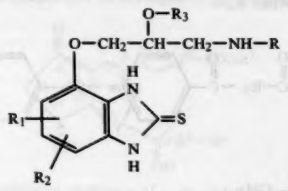
Filed Jan. 9, 1979, Ser. No. 2,129

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1978, 2801980

Int. Cl.² A61K *31/415;* C07D *235/28*

U.S. Cl. 424—273 B **20 Claims**

1. 4-Hydroxy-2-benzimidazoline-thione compound of the formula



(I)

wherein

R is lower alkyl of up to 6 carbon atoms;

R_1 and R_2, which can be the same or different, are hydrogen or lower straight-chained or branched alkyl of up to 6 carbon atoms or

R_1 and R_2 together represent alkylene of 2 to 4 carbon atoms; and

R_3 is alkanoyl of up to 6 carbon atoms, or aroyl up to 7 carbon atoms;

and the pharmacologically acceptable salts thereof.

16. Method of treating circulatory and cardiac diseases which method comprises applying to an afflicted subject a therapeutically effective amount of a 4-hydroxy-2-benzimidazoline-thione compound as claimed in claim 1.

4,215,135
ANTIINFLAMMATORY 2-SUBSTITUTED-1H-PHENANTHRO[9,10-D]IMIDAZOLES

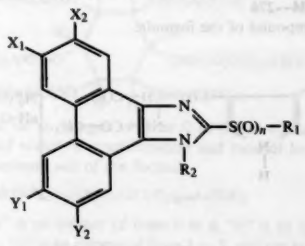
Saul C. Cherkofsky, Wilmington, Del., and Thomas R. Sharpe, Fort Salonga, N.Y., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 948,035, Oct. 2, 1978, abandoned. This application Jun. 8, 1979, Ser. No. 45,671

Int. Cl.² A61K *31/415;* C07D *235/28*

U.S. Cl. 424—273 B **21 Claims**

1. A compound of the formula

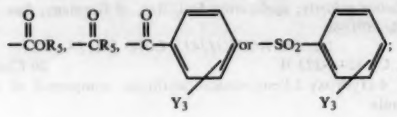


wherein

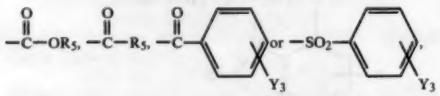
n=0–2

R_1=—CF_2H, —CF_3 or —$CF_2CH_mF_{3-m}$ in which m=0–3
R_2=—H,

2-tetrahydropyranyl, 2-tetrahydrofuranyl,



provided when R_2=



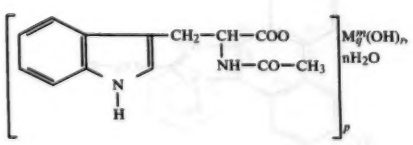
then n=0;
R_3=—H or —CH_3;
R_4=C_{1-3} alkyl, benzyl, —$CH_2CH_2OCH_3$ or

R_5=C_{1-4} alkyl or benzyl;
X_1 and Y_1 are independently selected from the group consisting of —H, —F, —Cl, dimethylamino and C_{1-2} alkoxy;
X_2 and Y_2 are independently selected from the group consisting of —H, —F and —Cl;
Y_3 is —H, —F, —Cl, —Br, C_{1-4} alkyl, C_{1-4} alkoxy or —NO_2; and,
when R_2=—H, a pharmaceutically suitable acid salt
when n=0 or pharmaceutically suitable metal salts
when n=1–2.

15. A method for reducing inflammation in mammals comprising administering to the mammal an amount of a compound of claim 1 sufficient to provide anti-inflammatory activity therein.

4,215,136
INSOLUBLE METAL SALTS OF N-ACETYL-TRYPTOPHANE AND USE THEREOF
Jean P. Durlarch, Paris, France, assignor to Cooperation Pharmaceutique Francaise, Melun, France
Filed May 23, 1977, Ser. No. 799,532
Claims priority, application France, May 26, 1976, 76 16121
Int. Cl.[2] A61K *31/405;* **C07D** *209/20*
U.S. Cl. 424—274 **6 Claims**

1. A compound of the formula:



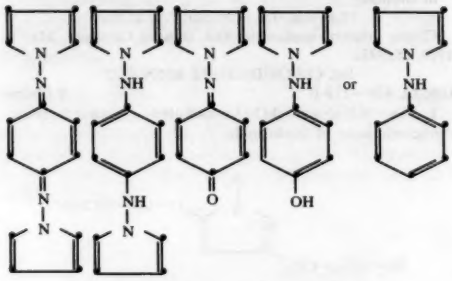
(I)

in which:
M represents an atom of aluminium, of titanium or of bismuth of valency m,
p and q are whole numbers at least equal to 1,
r is 0 or a whole number at least equal to 1, with m×qq=p+r,
n is 0 or a whole or fractional number.

6. A medicament useful as an anti-ulcer agent characterized by the fact it comprises as an active substance, an effective amount of at at least one compound according to claim 1 and a material selected from the group consisting of adjuvants and excipients.

4,215,137
METHOD OF ALLEVIATING DISEASES BY CELL-MEDIATED IMMUNE MODULATION
Richard A. Dobson, Schodack, and John R. O'Connor, Cohoes, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.
Filed Jun. 26, 1978, Ser. No. 919,224
Int. Cl.[2] A61K *31/40*
U.S. Cl. 424—274 **14 Claims**

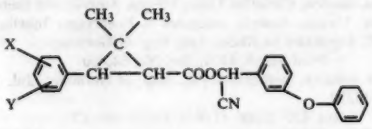
1. A method for alleviating diseases in animals, susceptible to treatment by modulation of the cell-mediated immune response system, selected from viral, inflammatory, hyperglycemic and hypertensive diseases which comprises administering orally to a diseased animal an effective amount of a compound having one of the formulas:



as the immuno modulating agent.

4,215,138
INSECTICIDAL COMPOUNDS OF PHENYLCYCLOPROPANE CARBOXYLIC ACID ESTERS
Kiyomi Ozawa; Shigeru Ishii, both of Funabashi; Mamoru Hayashi, Shiraoka; Masayoshi Hirose, Shiraoka, and Ryoichi Nonaka, Shiraoka, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan
Filed Dec. 15, 1978, Ser. No. 969,866
Claims priority, application Japan, Dec. 27, 1977, 52/156381; Apr. 3, 1978, 53/38968
Int. Cl.[2] A01N *9/28, 9/06;* **C07D** *317/44;* **C07C** *121/64*
U.S. Cl. 424—282 **7 Claims**

1. An insecticidal compound of phenylcyclopropane carboxylic acid ester having the formula



(I)

wherein X and Y are the same or different and represent a hydrogen or a halogen atom, methyl group, a lower alkoxy group, trifluoromethyl group, phenoxy group or X and Y form

group; with the proviso, that X and Y are not both hydrogen atoms.

5. An insecticidal composition which comprises an insecticidally effective amount of a compound of phenylcyclopropane carboxylic acid ester having the formula (I), according to claim 1, and an adjuvant in a form of a solution, a dispersion, an emulsion, an oil spray, a wettable powder, a dust, a granule, a tablet, a pellet, a paste or an aerosol.

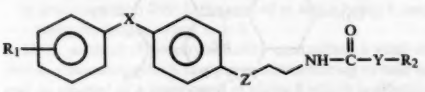
4,215,139
CARBAMIC ACID DERIVATIVES

Ulf Fischer, Frenkendorf; Fernand Schneider, Basel, and Rene Zurflueh, Bülach, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 6, 1979, Ser. No. 18,026
Claims priority, application Switzerland, Mar. 17, 1978, 2929/78
Int. Cl.[2] C07C *149/437, 125/06;* A01N *9/30, 9/24*
U.S. Cl. 424—300 **33 Claims**

26. A insecticidal composition comprising inert carrier material and, as the active ingredient, a pesticidally effective amount of one or more compounds of the formula

I



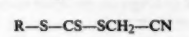
wherein R_1 is hydrogen, fluorine, chlorine, alkyl of from one to six carbons, trifluoromethyl, hydroxy or methoxy, X is oxygen, carbonyl methylene, sulphur or sulphonyl, Z is oxygen, methylene, or sulphur, Y is oxygen or sulphur and R_2 is alkyl of from one to six carbons.

4,215,140
CYANOMETHYL ALKYL TRITHIOCARBONATES AS INSECTICIDAL AGENTS

Julian A. Otto, deceased, late of Stockholm, N.J., and Ermalinda O. Cooke, administratrix, Ferguson, Mo., assignors to Allied Chemical Corporation, Morristown, N.J.

Filed Sep. 15, 1978, Ser. No. 942,589
Int. Cl.[2] A01N *9/12;* C07C *154/02*
U.S. Cl. 424—301 **8 Claims**

1. A compound of the formula:



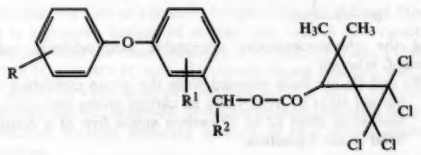
wherein R is alkyl C_1–C_8.

4,215,141
COMBATING INSECTS AND ACARIDS WITH 4,4,5,5-TETRACHLORO-2,2-DIMETHYL-SPIROPENTANE-1-CARBOXYLIC ACID 3-PHENOXY-BENZYL ESTERS

Rainer Fuchs, Wuppertal; Ingeborg Hammann, Cologne, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 21, 1979, Ser. No. 41,222
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1978, 2825314
Int. Cl.[2] A01N *9/20, 9/24;* C07C *69/74, 121/66*
U.S. Cl. 424—304 **9 Claims**

1. A 4,4,5,5-tetrachloro-2,2-dimethyl-spiropentane-1-carboxylic acid 3-phenoxy-benzyl ester of the formula



in which

R and R^1 each independently is hydrogen or halogen, and R^2 is hydrogen, cyano or ethynyl.

8. A method of combating arthropods which comprises applying to the arthopods, or to a habitat thereof, an arthropodicidally effective amount of a compound according to claim 1.

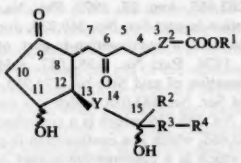
4,215,142
PROSTAGLANDIN ANALOGUES

Masaki Hayashi; Katsuichi Shimoji, and Yoshinobu Arai, all of Takatsuki, Japan, assignors to Ono Pharmaceutical Co. Ltd., Osaka, Japan

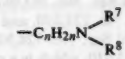
Filed Sep. 8, 1978, Ser. No. 940,685
Claims priority, application Japan, Sep. 16, 1977, 52-110504
Int. Cl.[2] C07C *177/00;* A61K *31/14, 31/215*
U.S. Cl. 424—305 **15 Claims**

1. A prostaglandin E_1 analogue of the general formula:

IV



and cyclodextrin clathrates of such acids and esters and, when R^1 represents a hydrogen atom or a group $-C_mH_{2m}COOR^5$ in which R^5 represents a hydrogen atom and m is as hereinbefore defined, non-toxic salts thereof and, when R^1 represents a group



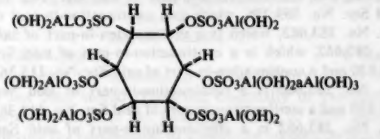
in which n, R^7 and R^8 are as hereinbefore defined, non-toxic acid addition salts thereof.

4,215,143
ANTI-ULCER PHARMACEUTICAL COMPOSITION CONTAINING INOSITOL HEXASULFATE ALUMINUM OR SODIUM ALUMINUM SALT AS ACTIVE INGREDIENT

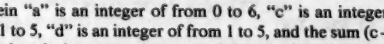
Zen-ichi Henmi, Mobara; Akira Kotaki, Tokyo, and Takafumi Kitano, Mobara, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Sep. 7, 1978, Ser. No. 940,205
Claims priority, application Japan, Feb. 24, 1978, 53-19770
Int. Cl.[2] A61K *31/185*
U.S. Cl. 424—315 **2 Claims**

1. An anti-ulcer pharmaceutical composition comprising as an active ingredient a therapeutically effective amount of a compound selected from the group consisting of inositol hexasulfate aluminum salt of the formula:



wherein "a" is an integer of from 0 to 6 and contains 6–12 molecules of water of crystallization and inositol hexasulfate sodium aluminum salt of the formula



wherein "a" is an integer of from 0 to 6, "c" is an integer of from 1 to 5, "d" is an integer of from 1 to 5, and the sum (c+d) is equal to 6, the composition containing 6 to 12 molecules of

water of crystallization and a pharmaceutically acceptable carrier.

4,215,144

METHOD OF TREATING AND CONTROLLING GINGIVITIS

Geraldine H. Thiele, New Oxford, Pa., assignor to Oxford Hill Ltd., New Oxford, Pa.

Continuation of Ser. No. 755,400, Dec. 29, 1976, Pat. No. 4,097,064, which is a continuation-in-part of Ser. No. 890,239, Mar. 27, 1978, which is a continuation of Ser. No. 642,114, Dec. 18, 1975, which is a continution-in-part of Ser. No. 724,942, Sep. 20, 1976, which is a continuation-in-part of Ser. No. 724,943, Sep. 20, 1976, which is a continuation-in-part of Ser. No. 113,362, Feb. 8, 1971, Pat. No. 3,741,204, which is a continuation-in-part of Ser. No. 123,830, Mar. 12, 1971, Pat. No. 3,767,812, which is a continuation-in-part of Ser. No. 283,662, Aug. 25, 1972, Pat. No. 3,805,776, which is a continuation-in-part of Ser. No. 283,663, Aug. 25, 1972, Pat. No. 3,828,772, which is a continuation-in-part Ser. No. 369,236, Jun. 12, 1973, Pat. No. 3,924,000, and a continuation-in-part of Ser. No. 483,010, Jun. 25, 1974, Pat. No. 3,982,017, said Ser. No. 890,239, is a continuation of said Ser. No. 724,943, which is a continuation of said Ser. No. 483,010, which is a continuation-in-part of said Ser. No. 369,236, which is a continuation-in-part of said Ser. No. 283,663, which is a continuation-in-part of said Ser. No. 283,662, which is a continuation-in-part of said Ser. No. 123,830, and a continuation-in-part of Ser. No. 113,362, said Ser. No. 755,400 is a continuation of said Ser. No. 642,114, which is a continuation-in-part of said Ser. No. 483,010, which is a continuation-in-part of said Ser. No. 369,236, which is a continuation-in-part of said Ser. No. 283,663, which is a continuation-in-part of said Ser. No. 283,662, which is a continuation-in-part of said Ser. No. 123,830, and a continuation-in-part of Ser. No. 113,362, said Ser. No. 724,943 which is a continuation of said Ser. No. 483,010, which is a continuation-in-part of said Ser. No. 369,236, which is a continuation-in-part of said Ser. No. 283,663, which is a continuation-in-part of said Ser. No. 283,662, which is a continuation-in-part of said Ser. No. 123,830, and a continuation-in-part of said Ser. No. 113,362, said Ser. No. 724,942 is a continuation-in-part of said Ser. No. 483,010, which is a continuation-in-part of said Ser. No. 369,236, which is a continuation-in-part of said Ser. No. 283,663, which is a continuation-in-part of said Ser. No. 283,662, which is a continuation-in-part of Ser. No. 123,830, and a continuation-in-part of said Ser. No. 113,362, said Ser. No. 642,112, which is a continuation-in-part of said Ser. No. 483,010, which is a continuation-in-part of said Ser. No. 369,236, which is a continuation-in-part of said Ser. No. 283,663, which is a continuation-in-part of said Ser. No. 283,662, which is a continuation-in-part of said Ser. No. 123,830, and a continuation-in-part of said Ser. No. 113,362, said Ser. No. 483,010 is a continuation-in-part of said Ser. No. 369,236, which is a continuation-in-part of said Ser. No. 283,663, which is a continuation-in-part of said Ser. No. 283,662, which is a continuation-in-part of said Ser. No. 123,830, and a continuation-in-part of said Ser. No. 113,362, said Ser. No. 369,236, which is a continuation-in-part of said Ser. No. 283,663, which is a continuation-in-part of said Ser. No. 283,662, which is a continuation-in-part of said Ser. No. 123,830 and a continuation-in-part of said Ser. No. 113,362, said Ser. No. 283,663 is a continuation-in-part of said Ser. No. 123,830 and a continuation-in-part of said Ser. No. 113,362, said Ser. No. 283,662 is a continuation-in-part of said Ser. No. 123,830 and a continuation-in-part of said Ser. No. 113,362, said Ser. No. 123,830 is a continuation-in-part of said Ser. No. 113,362.

The portion of the term of this patent subsequent to Jun. 27, 1995, has been disclaimed.

Int. Cl.[2] A61K *31/20, 31/45*

U.S. Cl. 424—318 **2 Claims**

1. The method of treating and controlling gingivitis and related periodontal diseases of the gingival tissue which comprises contacting the diseased gingival tissue with a liquefied composition comprised of a therapeutically effective amount of a non-necrotic fatty acid compound prepared from an unsubstituted, unsaturated fatty acid having at least one double bond, a liquid carrier, a buffering agent and ethanol, the pH of said liquefied composition being between 8 and 11.

4,215,145

MITICIDAL, FUNGICIDAL, AND OVICIDAL SULFENAMIDES

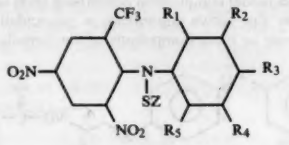
Gary D. Grantham, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 5, 1978, Ser. No. 966,591

Int. Cl.[2] A01N *9/20*; C07C *145/02*; A01N *9/12*

U.S. Cl. 424—324 **50 Claims**

1. A compound of the formula



wherein

R_1, R_3 and R_4 independently are H, F, Cl, Br, NO_2, CF_3, OCF_3 or OCF_2CF_2H;

R_2 is H, F, Cl, Br, NO_2 and CF_3;

R_5 is H or F;

Z is CCl_3, CCl_2F, CCl_2CCl_2H or CCl_2CFCl_2;

provided that when R_1 is NO_2 or CF_3, then R_3 must be H or F;

provided that no more than two of the substituents R_1, R_2, R_3 and R_4 are simultaneously Cl, Br, NO_2, CF_3, OCF_3 or OCF_2CF_2H and when two NO_2 groups are present, they are not ortho to each other.

21. A method for control of mites, fungus disease of a plant or insect eggs which comprises applying to a locus to be protected a miticidally, fungicidally or ovicidally effective amount of a compound of claim 1.

4,215,146

ANTIVIRAL AMINE DERIVATIVES OF GLYCEROL AND PROPANEDIOLS

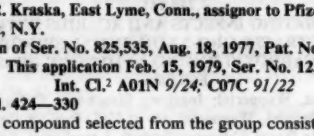
Allen R. Kraska, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 825,535, Aug. 18, 1977, Pat. No. 4,166,132. This application Feb. 15, 1979, Ser. No. 12,504

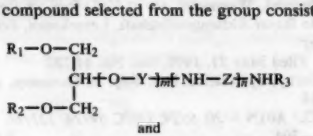
Int. Cl.[2] A01N *9/24*; C07C *91/22*

U.S. Cl. 424—330 **20 Claims**

1. A compound selected from the group consisting of



I



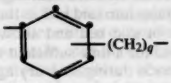
and

II

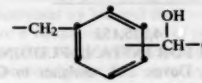
and the pharmaceutically acceptable acid addition salts thereof, wherein

R_1 and R_2 are each selected from the group consisting of normal alkyl of from 12 to 20 carbon atoms and normal alkenyl of from 12 to 20 carbon atoms free of a double bond in the 1-position;

Y is selected from the group consisting of ortho-, meta- and para-phenylenedimethylene;



wherein q is an integer of from 1 to 3, and the left bond is connected to O; and



wherein the left bond is connected to O;

Z is selected from the group consisting of ortho-, meta- and para-phenylenedimethylene;

R_3 is selected from the group consisting of hydrogen, alkyl of from 2 to 4 carbon atoms and ω-hydroxy(normal alkyl) of from 2 to 4 carbon atoms; and

m and n are each 0 or 1, the sum of m and n being 1, and R_3 being hydrogen when m is 0.

19. A method of prophylactically controlling a viral infection in a mammal which comprises administering to said mammal an amount of a compound of claim **1** which is effective to prophylactically control said viral infection.

4,215,147

ACROLEIN COMPOSITION AND METHOD OF ENHANCING EFFECTIVE LIFE THEREOF IN AN AQUEOUS MEDIUM

Charles L. Kissel, Anaheim, and Frederick F. Caserio, Jr., Laguna Beach, both of Calif., assignors to Magna Corporation, Santa Fe Springs, Calif.

Filed Jun. 16, 1978, Ser. No. 916,417

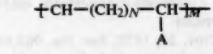
The portion of the term of this patent subsequent to Jul. 29, 1997, has been disclaimed.

Int. Cl.[2] A01N 9/24

U.S. Cl. 424—333 **17 Claims**

1. A method of enhancing the effective life of acrolein in an aqueous medium, comprising the steps of: (A) introducing into said aqueous medium a predeterminable amount of acrolein; and (B) adjusting the pH of the aqueous medium having acrolein present therein to from between about pH 6 and about pH 2.

15. A method of effectively reducing aerobic, anaerobic or sulfate-reducing bacteria in an aqueous medium comprising the steps of: (A) introducing into said aqueous medium a predetermined amount of acrolein; (B) adjusting the pH of the aqueous medium having acrolein present therein by contacting said medium with an effective pH-reducing amount of an organic acid, an inorganic acid or mixtures thereof selected from the class consisting of: (1) H_xA_y, wherein H is hydrogen, A is an inorganic radical, and x and y each are positive integers whereby H and A are valence balanced; (2) RA, wherein R is one of hydrogen, an alkyl or an aryl group, and A is one of CO_2H, OPO_3H_2, PO_3H_2, OSO_3H, and SO_3H; and (3)



wherein N is zero or a positive integer from one through three, M is a positive integer of at least one, and A is a member selected from the class consisting of CO_2H, OPO_3H_2, PO_3H_2, OSO_3H, and SO_3H, said pH thereby being adjusted and reduced to between about pH 6 and about pH 2; and (C) contacting said aerobic, anaerobic or sulfate-reducing bacteria with an effective bacteria reducing amount of said acidic aqueous medium.

4,215,148

ACROLEIN BUFFERING COMPOSITION AND METHOD OF ENHANCING EFFECTIVE LIFE OF ACROLEIN IN AN AQUEOUS MEDIUM

Charles L. Kissel, Anaheim, and Frederick F. Caserio, Jr., Laguna Beach, both of Calif., assignors to Magna Corporation, Santa Fe Springs, Calif.

Filed Jun. 16, 1978, Ser. No. 916,418

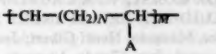
The portion of the term of this patent subsequent to Jul. 29, 1997, has been disclaimed.

Int. Cl.[2] A01N 9/24

U.S. Cl. 424—333 **15 Claims**

1. A method of enhancing the effective life of acrolein in an aqueous medium comprising the steps of: (A) introducing into said aqueous medium a predetermined amount of acrolein; and (B) adjusting the pH of the aqueous medium having acrolein present therein by contacting said medium with an effective pH-reducing amount of a buffered acid solution, whereby said aqueous medium having acrolein present therein is reduced to from between about pH 6 and about pH 2.

14. A method of effectively reducing aerobic, anaerobic or sulfate-reducing bacteria in an aqueous medium comprising the steps of: (A) adjusting the pH of the aqueous medium by contacting said medium with an effective pH-reducing amount of a buffered organic acid, a buffered inorganic acid or mixtures thereof, selected from the class consisting of: (1) H_xA_y, wherein H is hydrogen, A is an inorganic radical, and x and y each are positive integers whereby H and A are valence balanced; (2) RA, wherein R is one of hydrogen, an alkyl or an aryl group, and A is one of CO_2H, OPO_3H_2, PO_3H_2, OSO_3H, and SO_3H; and (3)



wherein N is zero or a positive integer from one through three, M is a positive integer of at least one, and A is a member selected from the class consisting of CO_2H, OPO_3H_2, PO_3H_2, OSO_3H, and SO_3H, said pH thereby being adjusted and reduced to between about pH 6 and about pH 2; (B) introducing into said aqueous medium a predetermined amount of acrolein; and (C) contacting said aerobic, anaerobic or sulfate-reducing bacteria with an effective bacteria-reducing amount of said buffered acidic aqueous medium.

4,215,149

PROCESS FOR IMPROVING THE PALATABILITY OF PET FOOD

Thomas J. Majlinger, Wilton, Conn., assignor to Standard Brands Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 853,013, Nov. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 670,028, Mar. 24, 1976, abandoned. This application Nov. 17, 1978, Ser. No. 961,571

Int. Cl.[2] A23K 1/00

U.S. Cl. 426—292 **5 Claims**

1. A process for maintaining the palatability of pet food which has been stored consisting essentially of extruding a moisturized mixture of pet food ingredients to form particulates, drying the particulates to a moisture content of less than about 15 percent, coating the dried particulates with fat, applying to the fat coated surface of the particulates from about 0.5 to about 2 percent, by weight, of an intact salt selected from the group consisting of monoalkali metal and monoalkaline earth metal salts of phosphoric acid and storing the salt coated pet food for about two months at 85° F. thereby enhancing the flavor of the food and increasing the acceptance thereof by cats.

4,215,150

PROCESS FOR THE REMOVAL OF UNDESIRABLE CONSTITUENTS FROM RAW COFFEE BEANS

Hans-Albert Kurzhals, Hambergen-Heissenbüttel, and Klaus F. Sylla, Bremen, both of Fed. Rep. of Germany, assignors to decofa Kaffee-Bearbeitungs-GmbH, Bremen, Fed. Rep. of Germany

Filed May 1, 1978, Ser. No. 902,004

Claims priority, application Fed. Rep. of Germany, May 5, 1977, 2720204

Int. Cl.[2] A23F *1/04*

U.S. Cl. 426—430 **14 Claims**

1. Process for the removal of constituents from raw coffee beans which contribute to the presence of undesired stimulants in roasted coffee without a substantial loss in the original caffeine content comprising treating the raw coffee beans at an elevated temperature of 40° to 120° C.; with an ester of low-molecular weight alkanoic acid containing 1 to 5 carbon atoms with a C_1–C_5 alkanol in combination with a ketone selected from the group consisting of acetone, butanone-2, pentanone-2, pentanone-3, methyl isopropyl ketone, and mixtures thereof, wherein the concentration of the ketone based upon the total of the ester and ketone is 0.05 to 50 percent by weight; wherein the weight ratio of the combination of ester and ketone to the raw coffee beans is 0.2:1 to 20:1; and separating ester and ketone from the coffee beans to at least the extent that the amount of ester and ketone remaining in the treated coffee after roasting are no greater than that in untreated roasted coffee.

4,215,151

PROCESS FOR ROASTING AN AGRO-FOOD PRODUCT IN A FLUIDIZED BED OF INERT PARTICLES

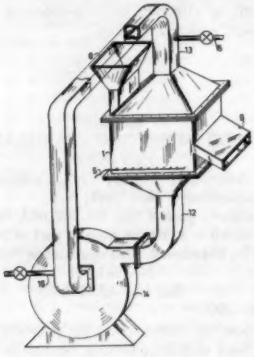
Gilbert M. Rios, Mauguio; Henri Gibert; Jean Crouzet, both of Montpellier, and Jean-Claude Vincent, Saint-Clement la-Riviere, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Filed May 11, 1978, Ser. No. 905,014

Claims priority, application France, May 11, 1977, 77 15007

Int. Cl.[2] A23F *1/02*; F26B *3/08, 3/10*

U.S. Cl. 426—467 **10 Claims**



1. A process for roasting grains of an agro-food product of a type such as will swell and lose weight during heat treatment comprising:

placing chemically inert particles in fluid suspension in an enclosure by means of a flowing carrier gas having a velocity greater than the minimum fluidization velocity of said particles so as to form a fluidized bed of said particles, said bed having a thickness of at most about 30 times the mean diameter of said grains and an apparent mean volume mass of about 1.2 to 4 times the initial volume of the grains to be roasted,

bringing said bed to an elevated roasting temperature,

introducing said grains into said bed so that said grains are in fluid suspension in said bed and allowing said grains to remain in said bed for a time sufficient to dry and to roast said grains, wherein during said drying and roasting the grains become lighter and rise to the top of the bed, and

removing the roasted and dried grains from the top surface of said bed by overflow.

4,215,152

STARCH FOR INSTANT PUDDING

Joseph D. O'Rourke, Dover, Del., assignor to General Foods Corporation, White Plains, N.Y.

Filed Nov. 13, 1978, Ser. No. 960,219

Int. Cl.[2] A23L *1/187*

U.S. Cl. 426—579 **11 Claims**

1. A process for making a dry pregelatinized starch product suitable for use in an instant pudding comprising: mixing an aqueous slurry of ungelatinized starch in water with a protein and an emulsifier, the amount of emulsifier and protein being effective to impart the resultant pregelatinized starch when reconstituted with creamy, smooth, viscous and glossy characteristics suitable for use in an instant pudding mix, thereafter gelatinizing and drying the slurry in a drum drier.

4,215,153

METHOD FOR THE PRODUCTION OF FISH MEAT POWDER RETAINING FUNCTIONAL CHARACTERISTICS OF FRESH FISH MEAT

Fumindo Kai, Tachikawa; Eitaro Kumazawa, Sayama; Yozo Ishioka, Higashikurume, and Kazuyoshi Ishida, Kawagoe, all of Japan, assignors to Snow Brand Milk Products Co., Ltd, Sapporo, Japan

Continuation-in-part of Ser. No. 716,561, Aug. 23, 1976, abandoned. This application Mar. 31, 1978, Ser. No. 892,012

Int. Cl.[2] A22C *25/00*

U.S. Cl. 426—643 **12 Claims**

1. A method of making a fish meat powder retaining the functional characteristics of fresh fish meat which comprises:

(a) mincing and kneading a fresh raw fish meat at a temperature of not more than 30° C. to yield a product retaining ATPase activity and at least 50% by weight undernatured myofibril proteins;

(b) forming a fish meat sol having fine air bubbles uniformly distributed therein by subjecting at a temperature of not more than 30° C. said product of step (a) to a colloid mill treatment;

(c) foaming said fish meat under a vacuum of from 4.6 Torr to 30 Torr whereby there is obtained a porous mass; and

(d) drying said porous mass at a temperature of not more than 30° C.

4,215,154

PROCESS FOR PRODUCING SEMICONDUCTOR MATERIALS AND METALS OF HIGHEST PURITY

Gerhard Behensky, and Josef Waldinger, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft für Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Nov. 24, 1978, Ser. No. 963,644

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1977, 2753567

Int. Cl.[2] B05D *5/12, 3/14*

U.S. Cl. 427—50 **4 Claims**

1. A process for producing high purity silicon semiconductor materials and metals by thermal decomposition of a gaseous compound containing the silicon semiconductor material or metal passing over the carrier bodies, comprising the steps of:

arranging the silicon carrier bodies into branches in a multi-

phase delta electrical connection during the start of the deposition process;

passing an equal amount of electrical current through each of the branches of the delta connection, so as to heat the carrier bodies to deposition temperature;

regulating the current in each of the delta branches by means of current-controlled regulator circuits, so that the same current flows through each delta branch;

switching over said multiphasedelta connection to a multiphase Y connection after the carrier bodies reach a predetermined resistance after being heated, so that the branch current decreases by $\sqrt{n}$ and the line voltage increases by $\sqrt{n}$ where n equals the number of phases in the line; and

passing a gaseous compound containing the semiconductor material or metal over the carrier bodies.

4,215,155
METHOD OF PREPARING MODIFIED TITANIUM DIOXIDE PHOTOACTIVE ELECTRODES

Howard McKinzie, Framingham, and Elizabeth A. Trickett, Acton, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jun. 22, 1978, Ser. No. 918,001
Int. Cl.[2] C25B *11/04, 11/10*
U.S. Cl. 427—74 **5 Claims**

1. A method of preparing polycrystalline thin film photoactive semiconductor electrodes utilizable in photoelectrochemical cells and photoassisted oxidation-reduction reactions comprising sequentially the steps of:

providing a suspension of finely divided electrode coating material in a volatile solvent selected from the group consisting of water, low molecular weight alcohols, esters, ketones, and mixtures thereof, wherein the material consists of a uniform mixture of titanium dioxide and at least one oxide of a metal selected from the group consisting of the d-electron transition metals excluding titanium, the metal exhibiting an oxidation state other than +4 in the oxide,

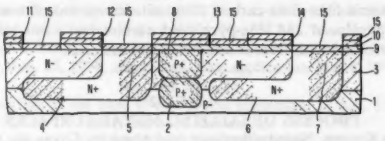
applying the suspension of electrode coating material to the surface of a conductive body to form a thin film of the electrode coating material thereon, and

heating the coated conductive body at an elevated temperature for a period of time sufficient to sinter the electrode coating to the body.

4,215,156
METHOD FOR FABRICATING TANTALUM SEMICONDUCTOR CONTACTS

Hormazdyar M. Dalal, Wappingers Falls; Majid Ghafghaichi, Poughkeepsie; Lucian A. Kasprzak, Hopewell Junction, and Hans Wimpfheimer, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 26, 1977, Ser. No. 827,912
Int. Cl.[2] H01L *21/443, 21/477*
U.S. Cl. 427—84 **20 Claims**



2. A method for fabricating a tantalum contact on a silicon semiconductor substrate comprising:

preparing the surface of at least a portion of said substrate so as to prevent the formation of amorphous silicon by cleaning said surface in a dilute HF etchant solution under conditions in which there is no substantial amount of light shorter than the wavelength of 5000 A;

depositing tantalum atop said portion of said substrate in a vacuum chamber at a low pressure and substrate temperature so as to avoid oxidation of said tantalum; and

sintering said substrate at a sufficient temperature and time to remove interfacial charges and films from between said substrate and said tantalum.

4,215,157
PROCESS FOR PREPARING POLYETHERIMIDE COATINGS

Edith M. Boldebuck, Schenectady, and Eugene G. Banucci, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 778,858, Mar. 18, 1977, Pat. No. 4,157,996.
This application Nov. 30, 1978, Ser. No. 965,192
Int. Cl.[2] B05D *5/12*
U.S. Cl. 427—116 **26 Claims**

1. A process for coating a substrate, which comprises (I) applying to the substrate a highly concentrated homogeneous coating solution of monomeric bis(ether dicarboxylic acid) and diamine reactants comprising

(1) at least one aromatic bis(ether dicarboxylic acid) selected from the group consisting of 2,2-bis[4-(3,4-dicarboxyphenoxy)phenyl] propane; 2,2-bis[4-(2,3-dicarboxyphenoxy)phenyl] propane, 4-(2,3-dicarboxyphenoxy)-4'-(3,4-dicarboxyphenoxy)diphenyl-2,2-propane; and mixtures thereof;

(2) at least one organic diamine selected from the group consisting of 4,4'-methylenedianiline, 4,4'-oxydianiline, m-phenylenediamine, and mixtures thereof; and

(3) an organic solvent selected from the group consisting of monoalkyl ethers of ethylene glycol having from 1 to 4 carbon atoms in the alkyl group, monoalkyl ethers of diethylene glycol having from 1 to 4 carbon atoms in the alkyl group, dipolar aprotic organic solvents selected from the group consisting of N-methyl-2-pyrrolidone, N,N-dimethylacetamide, dimethylsulfoxide, tetramethylurea, and mixtures thereof;

said bis(ether dicarboxylic acid) and said diamine being dissolved in said organic solvent in a combined amount of at least 0.67 part by weight per one part by weight of said organic solvent,

said diamine being dissolved in an amount from about 0.5 to about 2.0 moles per mole of said bis(ether dicarboxylic acid), said solution remaining homogeneous for at least one week when stored at about 20° C. to 30° C. in a tightly stoppered glass container; and thereafter (II) heating the applied solution at a temperature and for a time effective to form a polyetherimide coating on said substrate.

4,215,158
MAGNETIC RECORDING MEDIUM AND PROCESS FOR PRODUCING THE SAME

Seizi Hattori, Nishiibaragi; Takehiko Nakagawa, Kawasaki; Kazuo Kobayashi, Koza; Koichi Makino, Yokohama, and Wakatake Matsuda, Zama, all of Japan, assignors to Fujitsu Limited and Nippon Telegraph and Telephone Public Corporation, both of, Japan

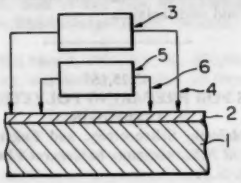
Filed Mar. 2, 1977, Ser. No. 776,591
Claims priority, application Japan, Mar. 3, 1976, 51-22209
Int. Cl.[2] H01F *1/10*
U.S. Cl. 427—130 **13 Claims**

1. A process for producing a magnetic recording medium of a thin film of ferrite, said process comprising the steps of:

forming a thin film of α-Fe_2O_3, wherein said α-Fe_2O_3 film comprises niobium in an amount from 0.1 to 10 percent based on the total number of the metallic atoms in said ferrite film;

reducing said thin film of α-Fe_2O_3 to Fe_3O_4 by heating said α-Fe_2O_3 containing said niobium at a temperature of from

325° to 400° C. under an atmosphere containing a hydrogen gas; and,



oxidizing said Fe_3O_4 to γ-Fe_2O_3 by heating said Fe_3O_4 containing niobium at a temperature from 150° to 450° C. in an atmosphere which contains oxygen.

4,215,159

CAVITY FILLING WITH A HOT MELT ADHESIVE COMPOSITION

Donald D. Donermeyer, Springfield, and Joseph G. Martins, Ludlow, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 4, 1978, Ser. No. 948,450
Int. Cl.[2] B23P 7/00
U.S. Cl. 427—142 **17 Claims**

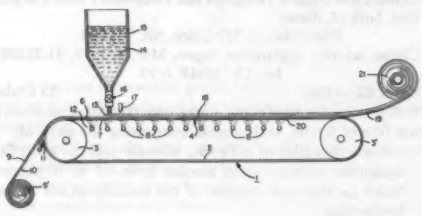
1. A method of filling a cavity in a substrate which comprises applying excess adhesive composition as a hot melt into the cavity, spreading the adhesive composition to fill the cavity, cooling the adhesive composition below its crystallization temperature and sanding the adhesive composition to provide a surface even with the surrounding substrate, wherein the adhesive composition comprises a block copolymer, a particulate mineral reinforcing agent and glass fiber, wherein the block copolymer is selected from the group consisting of copolyesters, copolyamides, copoly(esteramides) and copoly(ether-esters) melting at a temperature of above about 150° C., having from about 30 to about 70 weight percent of hard segments and from about 70 to about 30 weight percent of soft segments; wherein the weight ratio of block copolymer to particulate mineral reinforcing agent and glass fiber is in the range of about 3:7 to about 3:2, wherein the weight ratio of block copolymer to glass fiber is at least about 3:4 and wherein the weight ratio of particulate mineral reinforcing agent to glass fiber is in the range of about 1:3 to about 9:1.

4,215,160

METHOD OF FORMING WATERPROOFING MATERIAL

Arnold M. Rosenberg, Potomac, and James M. Gaidis, Ellicott City, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation of Ser. No. 851,065, Nov. 14, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 5,241
Int. Cl.[2] B05D 3/04, 3/12
U.S. Cl. 427—177 **9 Claims**



1. A method of forming a sheet-like, laminate waterproofing structure of a flexible sheet-like polymeric member having a first major side thereof substantially non-adherent to bituminous compositions and having a second major side thereof coated with a flexible membrane layer of adhesive bituminous composition comprising

supplying a forming member having a forming and a non-forming surface;

placing a flexible sheet-like polymeric member on the forming surface of the forming member with its first major side facing the forming surface, said first major side being substantially non-adherent to the bituminous compositions;

applying a semi-fluid adhesive bituminous composition having a temperature above the melting point of the polymeric member to a second major side of the polymeric member in an amount sufficient to form a membrane thereof of said composition of from about 0.025 to 0.2 inch thick while simultaneously cooling the forming surface at a rate sufficient to maintain the polymeric member below its melting point and having said forming surface support said polymeric member during application of the bituminous composition and the cooling; and

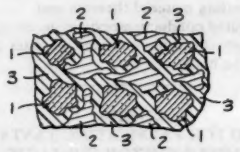
continuously cooling the forming surface at least until the bituminous composition of said structure has a temperature below the melting point of the polymeric member.

4,215,161

FIBER-RESIN-CARBON COMPOSITES AND METHOD OF FABRICATION

Robert W. Seibold, Santa Monica; Haig S. Parechanian, Fountain Valley; William T. Weatherill, La Palma, and Robert E. Lowe, Santa Ana, all of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Division of Ser. No. 531,662, Dec. 11, 1974, Pat. No. 4,100,322. This application Mar. 20, 1978, Ser. No. 890,647
Int. Cl.[2] B32B 7/00; B05D 3/02, 3/12
U.S. Cl. 427—228 **22 Claims**



1. The process for producing a plastic composite having improved elevated temperature strength and good heat resistance, which consists essentially of impregnating fibrous reinforcement material with a resin, curing said resin, pyrolyzing the resulting fiber-resin composite, reimpregnating the resulting pyrolyzed composite with additional resin and curing said additional resin, said resin reimpregnated composite forming a bimatrix fiber-resin-carbon composite composed of a mixture of pyrolyzed and non-pyrolyzed carbon and resin matrices reinforced with fibrous reinforcement material.

4,215,162

PROCESS OF COATING METAL SURFACES

Jan Kunnen, Noordwijkerhout, and Abraham C. van der Schee, Oegstgeest, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Continuation of Ser. No. 689,958, May 25, 1976, abandoned. This application Oct. 28, 1977, Ser. No. 846,360
Claims priority, application Netherlands, May 30, 1975, 7506412
Int. Cl.[2] B05D 1/18
U.S. Cl. 427—435 **6 Claims**

1. In an autodeposition process of applying a coating of

film-forming material to an acid-etchable metal, the metal surface being contacted with an aqueous dispersion of the film-forming material, which contains a metal-etching acid, followed by drying the coating, the improvement which comprises cationically dispersing the film-forming material in a cationic dispersion which contains the carboxylic acid radical derived from acrylic acid, methacrylic acid or an oligomer thereof and a cationic surfactant in an amount of at least 0.1% by weight.

4,215,163

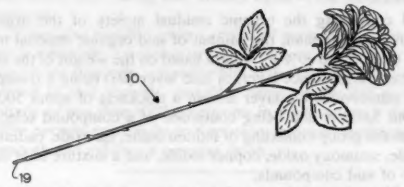
ARTIFICIAL FLOWERS AND METHOD FOR THEIR MANUFACTURE, UNISTEM

Bobby L. Lee, 5, Mok Cheong St., ground flr., block C, Kowloon, Hong Kong

Continuation-in-part of Ser. No. 790,016, Apr. 22, 1977. This application Jul. 18, 1978, Ser. No. 925,705

Int. Cl.[2] A41G *1/00*

U.S. Cl. 428—24 **8 Claims**



1. An artificial flower assembly, including in combination:

a plastic stem unitarily molded as one piece around a reinforcing wire core with fully developed side petioles as integral parts of said stem and wherein said petioles are provided with a reinforcing wire core having a portion lying within said stem and a calyx as an integral part thereof with a stud as an integral part thereof extending through said calyx said stud having an enlarged terminal portion,

fabric leaves adhered to said petioles and wherein said petioles are generally round in cross-section with a flat upper surface for support and attachment of said leaves and

a subassembly of fabric petals having a tubular central plastic member on which the petals are loosely mounted and by which they are retained, said tubular central member being mounted on and around said stud with said enlarged terminal portion lying beyond said central member and consequently preventing accidental removal of said subassembly.

4,215,164

MULTIPLE GLAZED UNIT

George H. Bowser, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 411,882, Nov. 1, 1973, abandoned, which is a continuation-in-part of Ser. No. 232,411, Mar. 7, 1972, Pat. No. 3,791,910, which is a continuation-in-part of Ser. No. 49,779, Jun. 25, 1970, abandoned. This application Jun. 9, 1975, Ser. No. 584,793

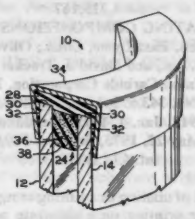
The portion of the term of this patent subsequent to Feb. 12, 1991, has been disclaimed.

Int. Cl.[2] B32B *17/10*; E06B *3/24*

U.S. Cl. 428—34 **13 Claims**

1. A multiple glazed unit comprising a pair of spaced, parallel glass sheets separated by a marginal edge spacer and a room temperature cured sealant adhered to said spacer and said glass sheets to hermetically seal the unit, said sealant being substantially solvent-free, having a consistency of about 500 to 700 metergrams at 250° F., a tensile strength of about 65 to 100 pounds per square inch, and consisting essentially of, in admixture, a rubbery polymeric component and a non-polymeric filler and reinforcing component, said polymeric component consisting essentially of:

(a) 18 to 65 percent by weight of the total sealant of butyl rubber cured by cross-linking butyl rubber polymers which, prior to curing, have a viscosity average molecular



weight between 300,000 and 500,000 and 0.6 to 2.2 mole percent unsaturation;

(b) 15 to 65 percent by weight of the total sealant of polybutene; and

(c) 8 to 60 percent by weight of the total sealant of polyisobutylene.

4,215,165

METHOD FOR COATING OF GLASS SURFACES

Rainer Gras, and Horst Schnurbusch, both of Herne, Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jul. 17, 1978, Ser. No. 925,171

Int. Cl.[2] B65D *23/08, 11/16*

U.S. Cl. 428—35 **19 Claims**

1. A method for the coating and protection of a glass surface which comprises:

treating said glass surface with an aqueous or an alcoholic solution of a silane reagent in order to provide a skim coat thereon;

drying the resulting silane-coated surface;

coating the dried silane-coated surface with a paste comprising (1) an aliphatic or cycloaliphatic diisocyanate, a mixture thereof, or a reaction product thereof with water, wherein the mole ratio of said diisocyanate to water is 2:≦1 ;1 and (2) a hydroxy-group containing polyester, derived from a ω-hydroxy carboxylic acid or a lactone therefrom, with a triol; wherein said acid or lactone contains at least 4 carbon atoms; and

hardening said paste.

4,215,166

FOAMABLE THERMOPLASTIC STICK AND FOAMED ELEMENT MADE THEREFROM

Harry Bussey, Jr., P.O. Box 115 Serpentine Rd., Navesink, N.J.

Filed Mar. 13, 1978, Ser. No. 886,075

Int. Cl.[2] B32B *3/00, 3/30*

U.S. Cl. 428—159 **8 Claims**

1. A foamed thermoplastic element having at least one curvilinear portion of substantially uniform cross-section shape

disposed along a longitudinal axis, and further having a plurality of spaced apart spines projecting from at least one surface of said portion along a common line, said spines being angularly disposed relative to said longitudinal axis with a transverse component of direction.

4,215,167

INK AND COATING COMPOSITIONS AND METHOD

George W. Borden, East Lyme, Conn.; Oliver W. Smith, South Charleston, W. Va., and David J. Trecker, Old Lyme, Conn., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 343,695, Mar. 22, 1973, which is a division of Ser. No. 103,912, Jan. 4, 1971, abandoned. This application May 22, 1975, Ser. No. 580,018

Int. Cl.[2] B05D *3/06*

U.S. Cl. 428—203 **6 Claims**

1. The method of coating or printing comprising the steps of:

(A) coating or printing on a substrate with a composition comprising,

(I) a liquid vehicle polymerizable to a solid upon exposure to actinic radiation comprising the reaction product of epoxidized soybean oil and acrylic acid, having at least two acrylate groups per mole of product,

(II) a photosensitizer for said vehicle,

(III) a pigment,

(B) exposing the coated or printed substrate to an amount of actinic radiation effective to polymerize said vehicle to form a solid coated or printed surface.

4,215,168

LAMINATED MULTILAYER SHEET STRUCTURE AND ITS UTILIZATION

Utami Yonemura, Hino; Kiyoshi Chiba, Niiza; Kunio Itoh; Yuji Mitani, both of Hino, and Shigenobu Sobajima, Hachioji, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jun. 27, 1978, Ser. No. 919,697

Claims priority, application Japan, Jun. 30, 1977, 52-77196

Int. Cl.[2] B32B *7/02, 15/04*

U.S. Cl. 428—215 **12 Claims**

1. A laminated multilayer sheet structure comprising (A) an opaque flexible sheet layer, and (B) a flexible layer laminated on the surface of layer (A) and composed of a transparent thermic ray reflecting layer (B_1) bonded to a transparent synthetic resin layer (B_2),

said layer (B_1) being a transparent thermic ray reflecting layer composed of (i) a layer of a metal having a thickness of about 50 to about 600 A, said metal being selected from the group consisting of gold, silver, copper, aluminum and a mixture or alloy of at least two of said metals, and (ii) a high refractive substance layer having a thickness of about 50 to about 600 A, of an oxide of titanium derived from a layer of an organic titanium compound of the formula

$$Ti_lO_mR_n$$

where R is alkyl of 1-20 carbon atoms,

$l=1-30$,

$m=4+3(l-1)$, and

$n=4+2(l-1)$,

and containing the organic residual moiety of the organic titanium compound, the amount of said organic residual moiety being 0.1 to 30% by weight based on the weight of the high refractive substance layer; or said layer (B_1) being a transparent semiconductive layer having a thickness of about 500 to about 5,000 A and being composed of a compound selected from the group consisting of indium oxide, tin oxide, cadmium oxide, antimony oxide, copper iodide, and a mixture of at least two of said compounds.

9. A method for heat-insulating a room, which comprises applying to the surface of a floor, wall, ceiling or partition, in the room, a laminated multilayer sheet structure comprising (A) an opaque flexible sheet layer, and (B) a flexible layer laminated on the surface of layer (A) and composed of a transparent thermic ray reflecting layer (B_1) bonded to a transparent synthetic resin layer (B_2),

said layer (B_1) being a transparent thermic ray reflecting layer composed of (i) a layer of a metal having a thickness of about 50 to about 600 A, said metal being selected from the group consisting of gold, silver, copper, aluminum and a mixture or alloy of at least two of said metals, and (ii) a high refractive substance layer having a thickness of about 50 to about 600 A, of an oxide of titanium derived from a layer of an organic titanium compound of the formula

$$Ti_lO_mR_n$$

where R is alkyl of 1-20 carbon atoms,

$l=1-30$,

$m=4+3(l-1)$, and

$n=4+2(l-1)$,

and containing the organic residual moiety of the organic titanium compound, the amount of said organic residual moiety being 0.1 to 30% by weight based on the weight of the high refractive substance layer; or said layer (B_1) being a transparent semiconductive layer having a thickness of about 500 to about 5,000 A and being composed of a compound selected from the group consisting of indium oxide, tin oxide, cadmium oxide, antimony oxide, copper iodide, and a mixture of at least two of said compounds,

said applying being carried out in such a manner that the layer (A) side of the sheet structure is in contact with said surface.

4,215,169

MELT-EXTRUDABLE COLD WATER SOLUBLE FILMS

Robert D. Wysong, Talleyville, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 936,746, Aug. 25, 1978, abandoned, which is a division of Ser. No. 739,280, Nov. 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 525,446, Nov. 20, 1974, abandoned, which is a continuation-in-part of Ser. No. 430,554, Jan. 3, 1974, abandoned. This application May 3, 1979, Ser. No. 35,704

Int. Cl.[2] B32B *27/06, 27/30*

U.S. Cl. 428—220 **14 Claims**

1. A melt-extruded cold-water soluble film 0.5-10 mils thick consisting essentially of 5 to 20 parts by weight of a polyethylene glycol, having an average molecular weight in the range between 325 and 550 (based upon measurement of the hydroxyl content thereof obtained by esterification of said glycol with phthalic anhydride/pyridine), in 100 parts by weight of a low molecular weight polyvinyl alcohol which is about 85 to about 90 mol % hydrolyzed (determined by saponification) and has a viscosity in the range between about 3 and about 10 cps as measured on a 4% aqueous solution at 20° C. (determined by the Hoeppler Falling Ball Method ASTM-D 1343-56, Part 8).

4,215,170

METALLIZATION PROCESS

D. Entique Vilaprinyo Oliva, Barcelona, Spain, assignor to Eurographics Holding, N. V., Curacao, Netherlands Antilles

Continuation-in-part of Ser. No. 640,392, Dec. 12, 1975. This application Feb. 28, 1978, Ser. No. 882,162

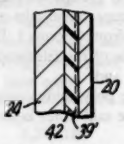
The portion of the term of this patent subsequent to May 8, 1996, has been disclaimed.

Int. Cl.[2] B44C *1/10;* **B32B** *31/12, 15/02*

U.S. Cl. 428—328 **17 Claims**

1. A process for the metallization of a substrate employing a reusable transfer agent comprising the steps of; depositing on the transfer agent a film of metal particles of the order of

magnitude of substantially less than 1000 Angstroms in thickness; coating a portion of at least one of said substrate and said metallized transfer agent with varnish; laminating said substrate and said transfer agent together before said varnish is cured so that said metal particles are embedded in said varnish; curing said varnish; separating said transfer agent from said substrate, whereupon said substrate is provided with said film of metallic particles which film permits some light transmission, appears continuous and smooth and exhibits a specular



metallic finish; and reusing said transfer agent in the metallization process.

13. A specular metallic coated article of manufacture comprising a substrate, a coating of cured varnish on at least a portion of said substrate, a metallic film in the form of particles embedded in said varnish, said film being on the order of magnitude of less than 1000 Angstroms in thickness such that said film permits some light transmission, appears continuous and smooth and exhibits a specular finish.

4,215,171

ELASTOMER MODIFIED TEXTILE MATERIAL AND METHOD OF PRODUCING SAME

Francis W. Marco, Pauline, and Hans H. Kuhn, Spartanburg, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 753,367, Dec. 22, 1976, abandoned. This application Jun. 2, 1978, Ser. No. 912,122

Int. Cl.[2] B32B *7/00*

U.S. Cl. 428—245 **15 Claims**

1. A method for producing an elastomer modified textile material having improved adhesion properties which consists essentially of coating the textile substrate with from about 1 to about 50 weight percent of an amine substituted natural or synthetic rubber elastomer, said elastomer having an average of at least two amine moieties substituted onto the elastomer backbone and further characterized as having an average molecular weight in the range of from about 100 to about 500,000, curing the resulting elastomer coated substrate, and thereafter recovering said elastomer modified textile material.

4,215,172

NOVEL RESINOUS COATING COMPOSITIONS

Glenn A. Pearson, 1311 Delaware, SW., Washington, D.C. 20024

Division of Ser. No. 794,548, May 6, 1977, Pat. No. 4,119,598, which is a continuation-in-part of Ser. No. 606,842, Aug. 22, 1975, abandoned. This application Sep. 19, 1978, Ser. No. 943,624

Int. Cl.[2] B32B *23/08, 21/08, 27/10, 15/08*

U.S. Cl. 428—264 **5 Claims**

1. As an article of manufacture, a substrate selected from the group consisting of wood, paper, metal and textiles, coated with a resinous solution comprising the reaction product of (a) about 65–80 moles of formaldehyde, (b) about 20–30 moles of urea, and (c) about 15–25 moles of phosphoric acid, said solution being formed by initial mixing of said formaldehyde and said urea followed by the addition of said phosphoric acid, whereby upon addition of said phosphoric acid, an exothermic reaction occurs leading to a substantially immediate and complete exothermic reaction to form a viscous, syrupy, water-white, aqueous resinous solution, the solution being a stable solution having a good shelf life and forming flexible, waterproof and non-burning films.

4,215,173

BONDED JOINTS AND METHOD AND MATERIAL FOR FORMING SAME

Dolph E. Hubbard, San Jose, Calif., assignor to Pacer Technology and Resources, Campbell, Calif.

Filed Aug. 7, 1978, Ser. No. 931,479

Int. Cl.[2] B32B *5/16, 23/08;* **C09J** *5/04*

U.S. Cl. 428—331 **9 Claims**

1. A joint or bond securing opposed substrates of porous materials firmly together, comprising a highly polymerized layer of alphacyanoacrylate resin and having particles of a solid chalkable accelerator intervening between the resin and parts of the adjacent surface of substrate, while parts of said resin extend into the pores of the substrate between particles of said solid accelerator, said solid accelerator comprising 0.5 to 9.5 parts by weight of a basic reacting solid selected from the group which consists of sodium hydroxide, potassium hydroxide and sodium borosilicate hollow microspheres combined with 9.5 to 0.5 parts by weight of an inert chalkable calcareous binder, said solid accelerator having the property of accelerating polymerization of the resin to prevent it soaking unduly into pores of the substrate.

3. A method of bonding together substrates of porous materials, such as open grained wood which are normally poorly bonded by resinous polymeric alphacyanoacrylates, which comprises, in combination, the steps of:

(a) applying to the substrates to be joined a light open or porous precoating of a chalkable solid accelerator composed of 0.5 to 9.5 parts by weight of a basic reacting solid material selected from the group which consists of sodium hydroxide, potassium hydroxide and sodium borosilicate hollow microspheres;

(b) thereafter applying a coating of polymerizable monomeric alphacyanoacrylate to at least one of the surfaces of substrate to overlie and partially penetrate through the accelerator coating into pores of the substrate; and

(c) holding the substrates with their bonding surfaces facing under pressure while the alphacyanoacrylate polymerizes to high molecular weight.

4,215,174

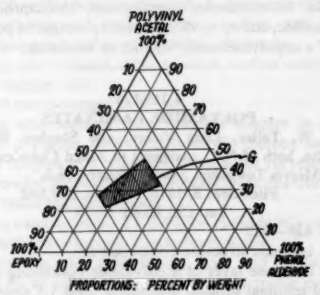
INSULATING COATING FOR TRANSFORMER WIRES

Ralph G. Flowers, Pittsfield, Mass., assignor to General Electric Company

Filed Mar. 24, 1978, Ser. No. 889,889

Int. Cl.[2] B32B *15/02*

U.S. Cl. 428—375 **5 Claims**



1. An improved insulating coated transformer wire of the type consisting of a wire having an insulating coating of phenol aldehyde resin, polyvinyl acetal resin and epoxy resin wherein the improvement comprises the composition defined within the accompanying triaxial diagram of FIG. 5.

2. A method for coating transformer wire with an insulating coating comprising the steps of:

preparing a composition consisting of 30 to 60 weight percent epoxy resin, and a ratio of from 1.10 to 1.90 polyvinyl acetal resin to phenol aldehyde resin;

applying the composition to the transformer wire; and

heating the coated transformer wire to a first temperature to fuse the coating; and

heating the coated wire to a second temperature to cause the coating to react.

4,215,175

NON-WOVEN FIBERS COATED WITH A POLYMER OF ETHYLENICALLY UNSATURATED BLOCKED AROMATIC DIISOCYANATES

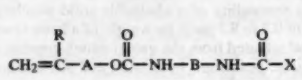
Harold A Tucker, Shaker Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 904,128, May 8, 1978, abandoned, which is a division of Ser. No. 734,916, Oct. 22, 1976, Pat. No. 4,101,491, which is a division of Ser. No. 550,627, Feb. 18, 1975, Pat. No. 4,008,247, which is a division of Ser. No. 412,325, Nov. 2, 1973, abandoned. This application Mar. 30, 1979, Ser. No. 25,625

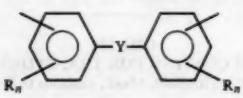
Int. Cl.[2] C08L *35/02*; D02E *3/00*

U.S. Cl. 428—375 **1 Claim**

1. An article comprising (1) a nonwoven fiber coated or impregnated with (2) a polymer comprising from about 0.1 percent to 100 percent by weight of polymerized units of an ethylenically unsaturated blocked aromatic diisocyanate of the formula



wherein R is hydrogen or a methyl or ethyl radical; A is a carbonyloxyalkylene radical containing 2 to about 8 carbon atoms or an aralkylene radical containing 7 to about 12 carbon atoms; B is a bivalent aromatic radical selected from the group consisting of arylene, naphthalene, and the structure



where R is defined as above; Y is O, S, or $-CH_2)_n$; n=0 to 3; and X is the radical fragment remaining after a hydrogen atom is removed from the nitrogen atom of an oxime, benzimidazole, pyrazole, benzotriazole, caprolactam, thiocaprolactam, or p-nitroaniline, and up to 99.9 percent by weight of polymerized units of a copolymerizable vinylidene monomer.

4,215,176

POLYAMIDE LAMINATES

Harold W. Tuller, Long Valley, and Stephen R. Schulze, Gillette, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Sep. 5, 1978, Ser. No. 939,592

Int. Cl.[2] B32B *27/36*

U.S. Cl. 428—412 **35 Claims**

28. A laminate structure comprised of:

(a) at least one layer of a polyamide containing amine and acid terminal groups, wherein at least 1.5 times as many amine end groups than acid end groups are present; and

(b) at least one layer comprised of polyethyleneterephthalate or a polycarbonate of bisphenol A, wherein said polymers, have been melt blended to provide pendant functional groups selected from the group consisting of carboxylic acid and carbonate and

wherein at least one polyamide layer is contiguous to at least one polyethyleneterephthalate or polycarbonate layer.

30. A laminate structure comprised of:

(a) at least one layer comprised of at least 50 wt.%, based on the total weight of the layer, of a polyamide containing amine and acid terminal groups, wherein at least 1.5 times as many amine end groups than acid end groups are present, and

(b) at least one other layer comprised of one or more polymers wherein said layer contains an effective amount of pendant functional groups selected from the group consisting of acid groups, metal salts of said acids wherein the metal is selected from Groups I, II, III, IV-A and VII of the Periodic Table of the Elements, acid anhydrides, and mixtures thereof; and

wherein at least one polyamide containing layer is contiguous to at least one said other layer.

4,215,177

PROCESS FOR TREATING POLYVINYL FLUORIDE AND LAMINATES PREPARED THEREFROM

Albert Strassel, Oullins, France, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Jan. 25, 1978, Ser. No. 872,254

Claims priority, application France, Mar. 4, 1977, 77 06392

Int. Cl.[2] B32B *27/38, 27/40*

U.S. Cl. 428—413 **9 Claims**

1. A process for treating polyvinyl fluoride surfaces to enhance adhesion of other polymers thereto comprising applying to at least one surface thereof a solution consisting essentially of a thermoplastic coating polymer selected from a polyurethane or an alkyl polymethacrylate and at least one aprotic polar solvent in which said polymer is soluble, and exposing said surface to a temperature of from about 120° C. to 230° C. for a time sufficient to evaporate said solvent.

4,215,178

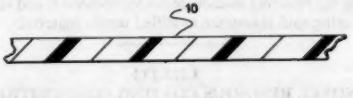
NON-STICK RUBBER LINER

Theodore O. Martin, Jr., Wadsworth, Ohio, assignor to Chloeta F. Martin, Wadsworth, Ohio, a part interest

Filed Apr. 28, 1978, Ser. No. 901,249

Int. Cl.[2] B32B *25/04, 25/12, 27/08*

U.S. Cl. 428—421 **22 Claims**



1. A non-stick rubber liner directly applied to metal equipment, comprising:

a blend, said blend having thoroughly mixed therein 100 parts by weight of a rubber elastomer, said rubber elastomer selected from the group consisting of (a) natural rubber, (b) a polymer made from diene monomers having from 4 to 12 carbon atoms, (c) a copolymer made from diene monomers having from 4 to 12 carbon atoms, and (d) a copolymer made from vinyl substituted aromatic monomers having from 8 to 12 carbon atoms and diene monomers having from 4 to 12 carbon atoms;

from about 10 to about 30 parts by weight of a fluorine-containing polymer, 90% of said fluorine-containing polymer having a particle size of 100 microns or less; and

from about 5 to about 20 parts of an oil compound compatible with said rubber elastomer, so that said mixed blend while directly applied to the metal equipment resists gypsum build-up.

4,215,179
COATING CONCRETE WITH LATEX POLYMERS

Sidney Melamed, Elkins Park; Ronald W. Novak, Hatfield, and Clarence J. Neyhart, Harleysville, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

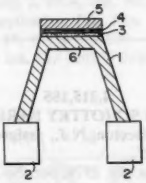
Filed Mar. 30, 1979, Ser. No. 25,429
Int. Cl.[2] B05D *1/38, 3/04;* B32D *13/12*
U.S. Cl. 428—451 20 Claims

1. In the method of painting concrete with a latex paint wherein a primer is used, the improvement comprising priming the concrete with an aqueous solution of a salt of an oxidatively curable resin selected from (A) water reducible alkyds and (B) a linear acrylic addition polymer having pendant groups derived from drying oil fatty acids, oxidatively curing the primer coating, applying a latex paint coating to the primed surface, and drying the latex paint.

4,215,180
OXIDE-COATED CATHODES FOR ELECTRON TUBES

Akira Misumi; Yukio Suzuki, and Kazuo Sunahara, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 18, 1979, Ser. No. 4,573
Claims priority, application Japan, Apr. 24, 1978, 53-47789
Int. Cl.[2] H01J *1/15*
U.S. Cl. 428—553 13 Claims



1. An oxide-coated cathode for electron tubes which comprises a base metal plate made of an alloy comprising nickel as a main component and 2% by weight or more of at least one high-melting point metal, an oxide layer, which is coated on the base metal plate, comprising at least one oxide of a reducing element, a carbon coating layer which is coated on the oxide layer, and an electron emissive alkaline earth oxide layer coated on the carbon coating layer.

13. A process for producing an oxide-coated cathode for electron tubes which comprises coating an oxide layer of at least one oxide of a reducing element of 50 to 1000 A in thickness on a base metal plate made of an alloy comprising nickel as a main component and 2% by weight or more of at least one high-melting point metal, coating a carbon coating layer of 50 to 700 A in thickness on the oxide layer, and coating an alkaline earth oxide layer capable of emitting electrons on the carbon coating layer.

4,215,181
FRETTING FATIQUE INHIBITING METHOD FOR TITANIUM

Robert K. Betts, Cincinnati, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

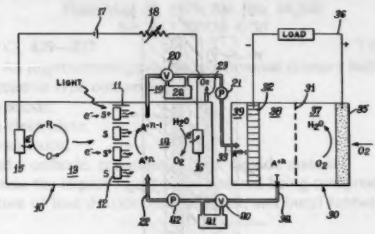
Filed May 11, 1978, Ser. No. 904,847
Int. Cl.[2] F16B *5/00, 7/04*
U.S. Cl. 428—591 2 Claims

1. A pair of relatively movable titanium-base alloy members having pressure face surfaces in opposed relationship, and a copper shim insert positioned between and in contact with said pressure face surfaces thereby inhibiting the effects of fretting fatigue caused by the differential strain occurring in said surfaces during movement of said relatively movable members.

4,215,182
CONVERSION OF SOLAR ENERGY TO CHEMICAL AND ELECTRICAL ENERGY

Peter G. P. Ang, and Anthony F. Sammells, both of Naperville, Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed May 29, 1979, Ser. No. 43,144
Int. Cl.[2] H01M *8/18, 6/30*
U.S. Cl. 429—15 43 Claims



1. A process for conversion of solar energy to electrical energy by using a photoelectrochemical membrane cell to regenerate a redox anolyte of a redox-oxygen cell for production of electrical energy comprising in combination:

A. in a photoelectrochemical membrane cell;

illuminating photosensitizers with solar energy thereby producing excited sensitizers and electrons, said sensitizers being located in a redox electrolyte comprising R/O couples adjacent an electron transferring membrane separating said redox electrolyte from a redox aqueous anolyte comprising A^{+n}/A^{+n-1} couples, said redox electrolyte couples having a redox potential more negative than the decomposition potential of said sensitizers and said redox anolyte couples having redox potential more positive than the excited state level of the sensitizers or the flat-band potential of a semiconductor sensitizer,

passing said electrons through said membrane oxidizing said sensitizers and reducing said redox anolyte couples,

regenerating the oxidized sensitizers by reduction in said redox electrolyte producing oxidized redox electrolyte couples,

electrochemically regenerating oxidized redox electrolyte couples at the surface of a negative electrode in electronic communication with said redox electrolyte and in electronic communication through an external bias circuit with a positive electrode in electronic communication with said redox aqueous anolyte, and venting oxygen produced at said positive electrode,

B. passing said reduced redox aqueous anolyte couples to a redox-oxygen cell;

C. in said redox-oxygen cell;

passing said reduced redox anolyte couples in contact with a porous flowthrough anode thereby oxidizing said couples to a condition suitable for recycle to said photoelectrochemical membrane cell as electron acceptor redox anolyte couples,

passing oxygen through a diffusion cathode to a catholyte of said redox-oxygen cell to form water,

withdrawing electrical energy from said redox-oxygen cell by an external load circuit in electronic communication between said porous anode and said diffusion cathode, an ionically conductive separator between the redox-oxygen cell catholyte and anolyte completing the circuit; and

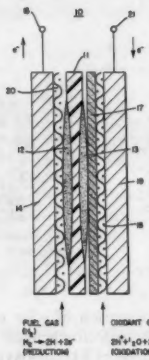
D. recycling said oxidized redox anolyte couples to the anolyte side of said photoelectrochemical membrane cell.

4,215,183

WET PROOFED CONDUCTIVE CURRENT COLLECTOR FOR THE ELECTROCHEMICAL CELLS

Edward N. MacLeod, Boston, Mass., assignor to General Electric Company, Wilmington, Mass.

Filed Jan. 2, 1979, Ser. No. 490
Int. Cl.[2] H01M 8/10
U.S. Cl. 429—30 7 Claims



1. In an electrochemical cell in which one of the electrodes is exposed to water, the combination comprising

(a) a housing

(b) a fluid impervious ion transporting membrane separating said housing into anode and cathode chamber

(c) a catalytic anode electrode bonded to the side of said membrane facing the anode chamber and adapted to be exposed to a fuel gas

(d) a catalytic cathode electrode bonded to the other side of said membrane facing the cathode chamber adapted to be exposed to an oxidant gas and to water

(e) an electrically conductive, porous, carbon paper sheet in contact with the cathode electrode bonded to said membrane over a substantial portion thereof said carbon paper including a hydrophobic polymer dispersed therein for wet proofing said carbon paper sheet to prevent formation of a water film adjacent to said bonded electrode and interruption of the conductive path between said bonded electrode and said conductive carbon paper sheet.

(f) a conductive screen in contact with the wet proofed carbon paper on the side remote from the cathode electrode bonded to the membrane,

(g) conductive plate means in contact with said screen and an output terminal to permit axial current flow from the surface of the bonded cathode electrode to said terminal.

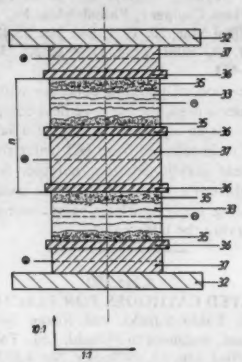
4,215,184

NICKEL-OXIDE/HYDROGEN BATTERY CELLS

Günter Gutmann, Esslingen, and Gabor Benczur-Ürmössy, Stuttgart, both of Fed. Rep. of Germany, assignors to Firma Deutsche Automobilgesellschaft mbH, Hanover, Fed. Rep. of Germany

Filed Aug. 6, 1979, Ser. No. 63,745
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835503
Int. Cl.[2] H01M 12/06
U.S. Cl. 429—101 10 Claims

1. A nickel-oxide/hydrogen battery cell including a pressure housing, and disposed in said housing a plurality of elements including positive nickel-oxide electrodes, negative hydrogen electrodes containing Raney nickel serving to catalyze hydrogen consumption or production, there being disposed between each two negative electrodes a diffusion element for the transport of hydrogen to and from the negative electrodes, said plurality of elements being configured as a stack in which each positive electrode is adjacent to two negative electrodes and said positive and negative electrodes are separated by separators and wherein the improvement comprises:



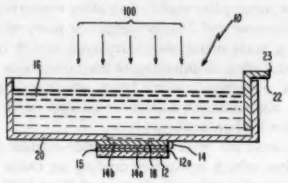
said negative electrodes are structurally integral with said diffusion elements and said diffusion elements consist of a metallically conducting substrate and also serve as current collecting support structures for said negative electrodes.

4,215,185

LIQUID JUNCTION SCHOTTKY BARRIER SOLAR CELL

Richard Williams, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 26, 1979, Ser. No. 24,065
Int. Cl.[2] H01L 31/06
U.S. Cl. 429—111 9 Claims



1. In a liquid junction Schottky barrier solar cell including an electrically conductive substrate and a semiconductor body of hydrogenated amorphous silicon having opposed major surfaces with a first major surface contacting said electrically conductive substrate and a second major surface contacting a liquid Schottky barrier material, the improvement which comprises employing as the Schottky barrier material an electrolyte solution comprising ceric and cerous ions.

4,215,186

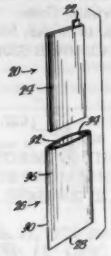
BATTERY PLATE SEPARATOR AND BATTERY CONTAINING THE SAME

Ben E. Jaeger, Rt. 2, Box 49, Plano, Ill. 60545

Filed Feb. 26, 1979, Ser. No. 15,472
Int. Cl.[2] H01M 2/16
U.S. Cl. 429—139 17 Claims

1. An improved battery plate separator, comprising an open ended pouch of plastics filter media material for closely receiv-

ing a battery plate therein, said plastics filter media material being a needled polypropylene fabric formed of a plurality of



polypropylene fibers randomly placed into and on opposite sides of a central grid.

4,215,187

GAS-TIGHT GALVANIC CELL

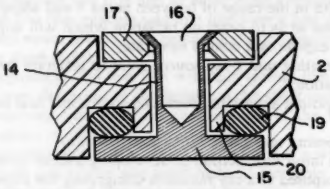
Bernd Gnida, Hofheim; Gerhard Simon, Kelkheim; Eckart Buder, Kriftel, and Hans-Jürgen Schwartz, Hemer, all of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Aug. 2, 1978, Ser. No. 930,358

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1977, 2742869; Dec. 17, 1977, 7738507

Int. Cl.[2] H01M *2/26*

U.S. Cl. 429—161 **6 Claims**



1. A gas-tight galvanic alkaline small battery cell having a synthetic plastic housing, and with sinter-foil electrodes, comprising:

electrodes and separators in the form of a plate package,

a housing enclosing the plate package and formed of a bottom portion and a lid,

the housing bottom having at least one housing post and and the plate package having apertures for receiving the housing post,

the tip of the housing post being welded to the housing lid, and

the housing lid having a pole lead-through for each polarity, said pole lead-through including a rivet having a plate-shaped rivet head, and an elastically deformable sealing ring pressed against the inside of the lid by the head.

4,215,188

RECHARGEABLE ELECTROCHEMICAL CELL

Deidrich J. Saathoff, Eagan, and Hanumanthiyna V. Venkatasetty, Burnsville, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 13, 1979, Ser. No. 66,155

Int. Cl.[2] H01M *10/40*

U.S. Cl. 429—194 **5 Claims**

1. An electrolyte for use in rechargeable electrochemical cells having a lithium and a depolarizer, comprising:

an electrochemically active amount of $LiAsF_6$ dissolved in dimethyl sulfite and a rechargeability improving amount of Li_2CO_3 contained therein to form an electrolyte solution, said solution being capable of passing through a molecular sieve on less than 5 Angstroms.

4,215,189

ELECTROCHEMICAL BATTERY EMPLOYING A LATEX BONDED LEAD DIOXIDE ELECTRODE

Bernard C. Bergum; Alf M. Bredland, and John W. Paulson, all of Madison, Wis., assignors to ESB Inc., Philadelphia, Pa.

Filed May 31, 1979, Ser. No. 44,148

Int. Cl.[2] H01M *4/56*

U.S. Cl. 429—217 **7 Claims**

1. An improvement in an electrochemical primary battery of the reserve type comprising

an anode,

an electrolyte,

a separator,

and a cathode, containing a lead dioxide material

wherein the improvement is the material being comprised of a mixture of lead dioxide, carbon black, and butyl rubber latex.

4,215,190

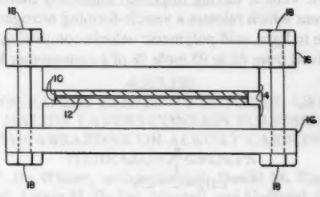
LIGHTWEIGHT BATTERY ELECTRODE

William A. Ferrando, 3615 N. Vacation La., Arlington, Va. 22206, and Raymond A. Sutula, 6301 Kaybro St., Laurel, Md. 20810

Filed Jun. 8, 1979, Ser. No. 46,976

Int. Cl.[2] H01M *4/24, 4/74*

U.S. Cl. 429—222 **13 Claims**



1. An electrode grid comprising:

a mat of graphite fibers wherein the graphite fibers are coated with a mixture of from about 85 to less than 100 weight percent nickel and from more than zero to about 15 weight percent phosphorous, the density of the graphite being greater than 1.8 gm/cm^3.

4,215,191

LIGHT-SENSITIVE VESICULAR RECORDING MATERIALS AND PROCESS OF USING

John C. Kwok, Sarnia, Canada, assignor to Bexford Limited, London, England

Continuation of Ser. No. 810,729, Jun. 28, 1977, abandoned. This application Feb. 5, 1979, Ser. No. 9,506

Claims priority, application United Kingdom, Mar. 1, 1977, 8533/77; May 5, 1977, 18859/77

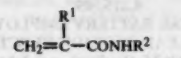
Int. Cl.[2] G03C *1/60, 1/76, 5/34*

U.S. Cl. 430—152 **25 Claims**

1. A recording material suitable for vesicular imaging which comprises a polymeric vehicle and dispersed uniformly therein a sensitising agent which releases a vesicle-forming nitrogen gas upon exposure to light, said polymeric vehicle comprising a copolymer derived from 62 to 95 mole % of a comonomer having the formula:

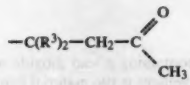
$$CH_2=\underset{\displaystyle R}{\underset{|}{C}}-CN \qquad (1)$$

wherein R represents hydrogen or an alkyl group having from 1 to 5 carbon atoms, and another comonomer having the formula:



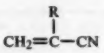
(2)

wherein R^1 represents hydrogen or an alkyl group having from 1 to 5 carbon atoms and R^2 represents hydrogen, an alkyl group having from 1 to 5 carbon atoms, $-CH_2OH$ or



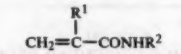
wherein R^3 is an alkyl group having from 1 to 5 carbon atoms, said copolymer having a nitrogen permeability constant in the range 1×10^{-15} to 1×10^{-10} and being softenable upon heating above its glass transition temperature to permit the gas released by the sensitising agent in the light-struck areas to form light-scattering or reflecting vesicles therein said recording material being in the form of a recording layer applied to a carrier sheet or film.

13. A process for the production of a recording material suitable for vesicular imaging which comprises producing a polymeric vehicle having dispersed uniformly therein a sensitising agent which releases a vesicle-forming nitrogen gas upon exposure to light, said polymeric vehicle comprising a copolymer derived from 62 to 95 mole % of a comonomer having the formula:



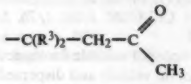
(1)

wherein R represents hydrogen or an alkyl group having from 1 to 5 carbon atoms and another comonomer having the formula:



(2)

wherein R^1 represents hydrogen or an alkyl group having from 1 to 5 carbon atoms and R^2 represents hydrogen, an alkyl group having from 1 to 5 carbon atoms, $-CH_2OH$ or



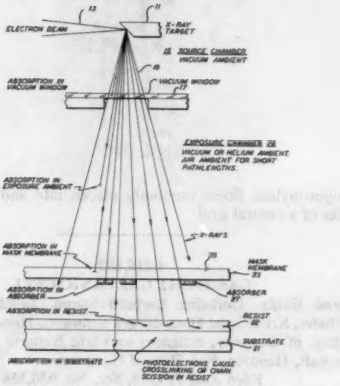
wherein R^3 is an alkyl group having from 1 to 5 carbon atoms, said copolymer having a nitrogen permeability constant in the range 1×10^{-15} to 1×10^{-10} and being softenable upon heating above its glass transition temperature to permit the gas released by the sensitising agent in the light-struck areas to form light-scattering or reflecting vesicles therein, and applying a recording layer comprising the polymeric vehicle and the sensitising agent to a carrier sheet or film.

4,215,192

X-RAY LITHOGRAPHY APPARATUS AND METHOD OF USE

William D. Buckley, Easton, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 16, 1978, Ser. No. 869,541
Int. Cl.[2] B05D 3/06
U.S. Cl. 430—270 **16 Claims**



1. A method of performing x-ray lithography comprising:

(a) coating the substrate on which the lithography is to be carried out with a resist;

(b) disposing an x-ray apparatus having a target means capable of generating M-line x-ray radiation having a wavelength in the range of between about 4 and about 14 angstroms so as to generate radiation which will impinge on and expose said coated substrate;

(c) operating said x-ray source so as to generate the M-line radiation;

(d) disposing a mask between said source and said substrate; and

(e) exposing said substrate to said radiation.

13. An improved method of developing a COP resist which as been exposed to x-ray radiation comprising the steps of first developing said resist in a developing solution having a concentration of approximately 5:1.8, the concentration being the ratio of MEK developer to an ethanol solvent for a short period of time and then developing said resist in a lower concentration of approximately 5:2.7 until development is completed.

4,215,193

DRY TONER PROCESS WITH IMPROVED TONING UNIFORMITY FOR COLOR DEVELOPING AN IMAGED TACKY AND NONTACKY SURFACE

Charles W. Manger, Middletown; Michael G. Fickes, Matawan, and John W. Long, Freehold, all of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 22, 1978, Ser. No. 963,083
Int. Cl.[2] G03C 5/24
U.S. Cl. 430—291 **9 Claims**

1. In a method for color development of a surface having imagewise tacky and nontacky image areas by depositing and distributing dry toner particles on the surface by means of a toner applicator apparatus comprising a housing for containment of toner, at least one moving component within the housing for agitating the toner, means to release toner from the housing, and at least one pad mounted on the apparatus whereby the distributed toner particles become imagewise adhered to the tacky image areas, the improvement wherein the toner particles consist essentially of an intimate mixture of: (A) 25 to 75% by weight of substantially colorless, inert, none-

lectroscopic spheroidal shape polymer particles having size distribution in the range of greater than 5 to less than 60 micrometers, not more than 15% of the polymer particles being less than 10 micrometers and not more than 15% of the polymer particles being greater than 50 micrometers of equivalent spherical diameter, and (B) 75 to 25% by weight of colorant particles having a size distribution within the range of 0.2 to 30 micrometers and not more than 50% of the colorant particles being less than 1 micrometer particle size.

4,215,194

METHOD FOR FORMING THREE-DIMENSIONAL OBJECTS FROM SHEET METAL

Stephan C. Shepherd, Winnetka, Ill., assignor to Masterwork, Inc., Chicago, Ill.

Filed Feb. 21, 1978, Ser. No. 880,022
Int. Cl.[2] G03C 5/00
U.S. Cl. 430—323 **5 Claims**

1. A method for forming three-dimensional metallic objects from sheet metal comprising the steps of:
(a) preparing first and second films of a desired design;
(b) applying a light sensitive resist material to opposite sides of the sheet metal;
(c) retouching said first film by eliminating a selected line on said first film, placing said first film over a first side of the sheet metal, placing said second film over a second side of the sheet metal;
(d) registering said first film with said second film to assure proper alignment of the design on the sheet metal;
(e) securing said first and second films in the registered position to form a masked assembly;
(f) exposing said masked assembly to light of a wavelength which will render said resist material insoluble;
(g) removing said first and second films;
(h) washing unexposed resist material from said masked assembly with a rinse agent;
(i) drying the exposed masked assembly;
(j) applying an etchant to said exposed masked assembly in a controlled manner thereby forming openings in the sheet metal corresponding to said desired design and forming score lines on said second side of the sheet metal;
(k) washing said etchant from said masked assembly;
(l) removing said exposed resist material from said sheet metal; and
(m) bending portions of said etched metal to different planes to form a crease along said score lines whereby an object incorporating design portions in different planes is formed, said adjacent design portions being joined to one another by said crease.

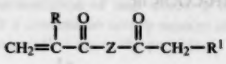
4,215,195

POLYMERS OF AMIDE COMPOUNDS USEFUL IN PHOTOGRAPHIC MATERIALS

Ignazio S. Ponticello, Rochester; Kenneth R. Hollister, Pittsford, and Richard C. Tuites, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 20, 1978, Ser. No. 971,463
Int. Cl.[2] G03C 1/72
U.S. Cl. 430—496 **15 Claims**

1. A radiation sensitive element comprising a support having thereon at least one radiation sensitive layer and a crosslinkable polymer of at least about 0.1 percent, by weight, of at least one polymerizable compound of formula (I):



wherein R is hydrogen or methyl; R^1 is cyano or

wherein R^2 is alkyl; Z is —X—R^3—X— or

wherein each —X— is —O— or —NR^4—, provided at least one —X— is —NR^4—, wherein R^4 is hydrogen or alkyl, R^3 is divalent hydrocarbon and D_1 and D_2 together are the carbon atoms necessary to complete a 5 to 7 membered ring.

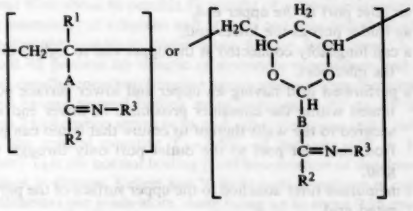
4,215,196

PHOTOGRAPHIC ELEMENTS IN WHICH GELATIN SILVER HALIDE LAYERS CONTAIN POLYMERS WITH SEMICARBAZONE OR ALKOXY CARBONYL HYDRAZONE GROUPS

Walter F. De Winter, 's-Gravenwezel; Daniël M. Timmerman, Mortsel; Arthur H. De Cat, Mortsel, and Godfried A. Kockelbergh, Mortsel, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

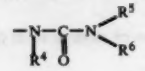
Filed Jun. 14, 1977, Ser. No. 806,523
Claims priority, application United Kingdom, Jun. 29, 1976, 27053/76; Jan. 19, 1977, 2149/77
Int. Cl.[2] G03C 1/72
U.S. Cl. 430—627 **3 Claims**

1. A photographic element comprising a support and at least one radiation-sensitive gelatin silver halide emulsion layer comprising a polymeric compound containing at least 5 mole % of recurring units with semicarbazone or alkoxy carbonyl hydrazone groups in the side-chain, wherein said recurring units correspond to one of the formulae:



wherein:
A is a single bond or a bivalent organic group, taken from —CONH-alkylene-, —COO-alkylene-, and phenylene,

B is a single bond or alkylene,
R^1 is hydrogen or methyl,
R^2 is hydrogen, phenyl or lower alkyl (1–4 carbon atoms),
R^3 stands for -NH-COOR or



wherein R is a lower alkyl (1–4 carbon atoms), and each of R^4, R^5 and R^6 is hydrogen or lower alkyl (1–4 carbon atoms);
and wherein at least 5% by weight of said polymeric compound is present with respect to the gelatin content of the radiation-sensitive emulsion layer.

4,215,197
TEST MEANS AND METHOD FOR CREATININE DETERMINATION

Peter N. Tarbutton, Houston, Tex., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Aug. 4, 1978, Ser. No. 931,030
Int. Cl.[2] G01N *31/14*
U.S. Cl. 435—18 **28 Claims**

1. A composition for the detection of creatinine in a sample to be tested, which composition comprises a creatinine amidohydrolase, creatine amidinohydrolase, sarcosine dehydrogenase and a tetrazolium indicator.

4,215,198
STERILITY TESTING UNIT

Maurice R. Gordon, 15 Stuyvesant Cir. W., South Setauket, N.Y. 11733

Filed Sep. 15, 1978, Ser. No. 942,612
Int. Cl.[2] C12Q *1/22*
U.S. Cl. 435—31 **5 Claims**

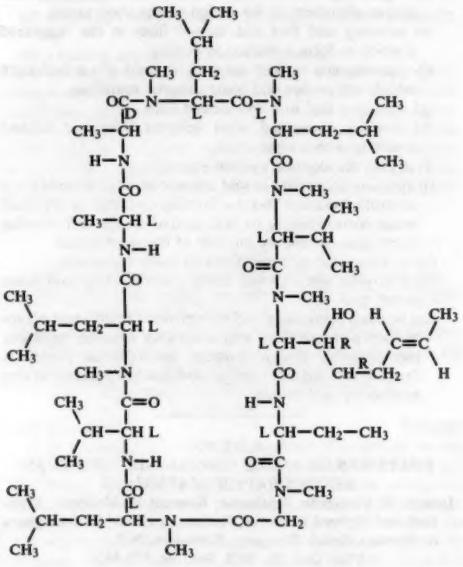
1. A disposable filtration and incubation sterility test unit for testing the sterility of filterable liquids which comprises:
a transparent container having upper and lower ends,
an inlet port at the upper end,
an outlet port at the lower end,
a cap hingeably connected at the upper end to tightly close the inlet port,
a perforated grid having an upper and lower surface positioned within the container proximate its lower end and secured to the walls thereof to ensure that liquid can pass from the inlet port to the outlet port only through the grid,
a membrane filter attached to the upper surface of the perforated grid,
a funnel-shaped outlet port located at the lower end of the container attached to the lower surface of the grid to assure that liquid can pass from the grid only through the outlet port,
means positioned within the container between the outlet port and the grid for sealing said port comprising an inert resilient ball confined within the space between the funnel-shaped outlet port and grid and means for restraining the ball at a position remote from the outlet port until closure of the port is desired,
means provided at the lower end of said container permitting vertical stacking of the filtration and incubation sterility test unit comprising a housing surrounding the outlet.

4,215,199
ANTIBIOTIC PRODUCTION

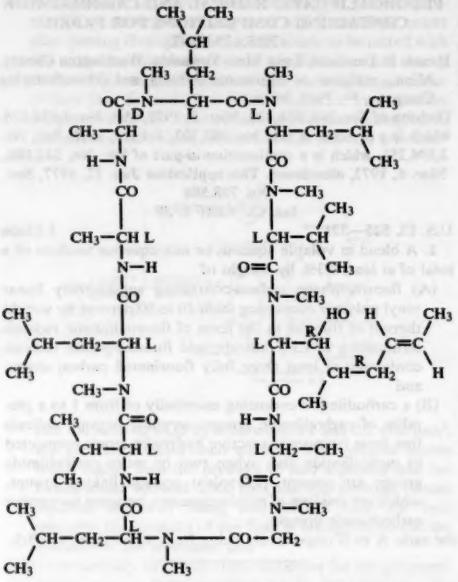
Eugen Härri, Therwil, and Artur Rüegger, Bottmingen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 781,722, Mar. 28, 1977, Pat. No. 4,117,118, which is a continuation-in-part of Ser. No. 721,836, Sep. 9, 1976, which is a continuation-in-part of Ser. No. 604,941, Aug. 15, 1975, abandoned, which is a continuation-in-part of Ser. No. 528,474, Nov. 29, 1974, abandoned. This application Jun. 5, 1978, Ser. No. 912,180
Int. Cl.[2] C12P *21/04*
U.S. Cl. 435—71 **9 Claims**

1. A process for the production of S7481/F-1 of formula I,



or S7481/F-2 of formula II,



or S7481/F-1 and S7481/F-2, which comprises cultivating a S7481/F-1; S7481/F-2, or S7481/F-1 and S7481/F-2 producing strain of the fungus species, *Cylindrocarpon lucidum* Booth or *Trichoderma polysporum* (Link ex Pers.) Rifai (now referred to as *Tolypocladium inflatum* Gams) in contact with a nutrient medium and isolating S7481/F-1; S7481/F-2 or S7481/F-1 and S7481/F-2.

4,215,200

CHEMICALLY AND ENZYMATICALLY MODIFIED COLLAGEN HEMOSTATIC AGENT

Teruo Miyata, Tokyo, Japan; Kurt H. Stenzel, and Albert L. Rubin, Englewood, both of N.J., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation-in-part of Ser. No. 916,885, Jun. 19, 1978, abandoned, which is a continuation of Ser. No. 782,062, Mar. 28, 1977, abandoned. This application Oct. 2, 1978, Ser. No. 948,003

Int. Cl.[2] C07G *7/00*; C08L *89/06*

U.S. Cl. 435—273 **9 Claims**

1. An improved collagen hemostatic agent comprising enzyme-solubilized telopeptide-poor, crosslinked, polymeric collagen of regularly staggered quaternary structure having a minimum molecular length of 7000 A°, a minimum molecular diameter of 20 A°, a minimum periodicity of 670–700 A° and whose residual lysyl and carboxyl groups have been subjected respectively to at least one reaction selected from the group consisting of guanidination, esterification and guanidination-esterification to greatly enhance the net positive electrostatic charge of the collagen polymer.

4,215,201

PLANT FOR TRANSFORMING TOWN SOLID WASTE INTO A FERTILIZER

Manlio Cerroni, Via Bruxelles 53, Rome, Italy

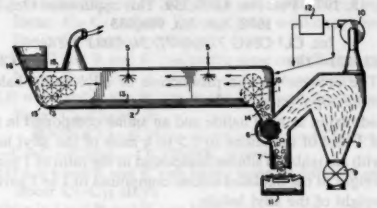
Filed Jul. 12, 1978, Ser. No. 923,772

Claims priority, application Italy, Jul. 19, 1977, 50351 A/77

Int. Cl.[2] C12B *1/00*

U.S. Cl. 435—290 **8 Claims**

1. A plant for transforming organic substances, contained in town solid waste, into a fertilizer or compost comprising in combination, a basin which is provided with a supporting plane along which said waste is disposed, a container about the basin retaining a confined atmosphere above ambient temperature accelerating fermentation of said waste, a reel driven along said plane with a continuous rotary motion about its own axis and a translation motion along the previously mentioned plane



and having vanes which contact, crush, mince, crumble, and displace the waste along said plane in the single direction of travel of waste along said plane, charging means for entering onto said plane the material to be treated replacing material discharged after treatment, and discharging means for removing from the plane the treated material including means separating fermented compost from contaminating agents.

4,215,202

SOFT ETHYLENIC POLYMER BLEND FOAMS

Chung P. Park, Pickerington, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 22, 1979, Ser. No. 14,019

Int. Cl.[2] C08J *9/14*

U.S. Cl. 521—81 **18 Claims**

1. A method for making soft ethylenic polymer resin blend foams having substantially closed-cell structure, dimensional stability, and flexural modulus less than about 150 psi which comprises forming under heat and pressure a flowable gel composition of an ethylenic polymer resin blend having low stiffness less than about 20,000 psi of from about 40 to about 90 percent by weight of a copolymer consisting essentially of of ethylene and monoethylenically unsaturated carboxylic acid, containing no salts thereof having from about 3 to about 15 percent by weight of carboxylic acid in admixture with from about 10 to about 60 percent by weight of a copolymer consisting essentially of ethylene and at least one monoethylenically unsaturated non-ionic comonomer having from about 5 to about 45 percent by weight of non-ionic comononer and at least one fluorocarbon blowing agent selected from fluorocarbons having normal boiling point between −30° to 30° C., from 2 to 4 carbon atoms in its molecular structure, and a value for the critical quantity $T_b - 0.5V_c$ of between 110 to 145 where T_b is the normal boiling point temperature of the fluorocarbon in degrees Kelvin and V_c is its critical volume in cubic centimeters per gram-mole, there being up to about 0.35 gram-mole of such blowing agent per 100 grams of resin blend in the flowable gel, and extruding the gel to ambient air atmosphere whereby the blowing agent separates from the gel and forms gas cells in the polymer resin blend.

4,215,203

PROCESS FOR THE PRODUCTION OF POLY(AMINE ALLYL HALIDE) COPOLYMER AND THEIR REACTION PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 862,020, Dec. 19, 1977, which is a continuation-in-part of Ser. No. 757,239, Jan. 6, 1977, Pat. No. 4,069,391, which is a continuation-in-part of Ser. No. 622,525, Oct. 15, 1975, Pat. No. 4,020,259. This application Oct. 30, 1978, Ser. No. 956,053

Int. Cl.[2] C08G 77/04, 77/24; C08J 9/16

U.S. Cl. 521—189 8 Claims

1. The process for the production of allyl halide-halohydrinamine copolymers by the following steps:

(a) admixing an allyl halide and an amine compound in ratio of 1 mol of the amine to 0.5 to 6 mols of the allyl halide with an oxidated silicon compound in the ratio of 1 part by weight of the oxidated silicon compound to 1 to 3 parts by weight of the allyl halide;

(b) agitating said mixture for 10 to 60 minutes at a temperature between ambient temperature and the boiling point of the reactants;

(c) adding a halohydrin to said mixture in the ratio of 0.5 to 2 mols of the halohydrin to one mol of the organic amine compound;

(d) agitating the mixture at a temperature between ambient and 70° C. for 10 to 60 minutes, thereby

(e) producing a liquid thermosetting resinous product;

(f) heating the liquid resinous product between 80° C. and 120° C. for 10 to 60 minutes, thereby

(g) producing a solid or cellular solid resinous product.

4,215,204

COATING COMPOSITIONS INCLUDING OLIGOMERIC HYDROXY PHOSPHATE CATALYST-D

Mohinder S. Chattha, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 26, 1978, Ser. No. 973,418

Int. Cl.[2] C08L 63/00, 61/20

U.S. Cl. 525—161 17 Claims

1. In a thermosetting coating composition comprising a film forming component and an amine aldehyde crosslinking agent, which composition cures by reaction between said amine aldehyde crosslinking agent and hydroxy functionality present on said film forming material, the improvement comprising including in said composition a catalyst for said reaction comprising at least one oligomeric hydroxy functional organophosphate ester having the formula:

$$(R-O)_n\overset{O}{\overset{\|}{P}}(OH)_{3-n}$$

wherein n=1 to 2 and R is selected from the group consisting of mono- or dihydroxy radicals containing one or more ester linkages and having a molecular weight of between about 120 and about 1500.

4,215,205

FLUOROALIPHATIC RADICAL AND CARBODIIMIDE CONTAINING COMPOSITIONS FOR FABRIC TREATMENT

Dennis P. Landucci, Lake Elmo Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 554,420, Mar. 3, 1975, Pat. No. 4,024,178, which is a division of Ser. No. 380,702, Jul. 19, 1973, Pat. No. 3,896,251, which is a continuation-in-part of Ser. No. 232,186, Mar. 6, 1972, abandoned. This application Jan. 12, 1977, Ser. No. 758,586

Int. Cl.[2] C08F 8/30

U.S. Cl. 525—331 1 Claim

1. A blend in volatile aqueous or non-aqueous medium of a total of at least 0.3% by weight of

(A) fluoroaliphatic radical-containing substantially linear vinyl polymer containing from 10 to 60 percent by weight thereof of fluorine in the form of fluoroaliphatic radicals terminating in CF_3 radicals, said fluoroaliphatic radicals containing at least three fully fluorinated carbon atoms, and

(B) a carbodiimide consisting essentially of from 1 to a plurality of carbodiimide groups, terminal organic radicals free from isocyanate-reactive hydrogen atoms connected to carbodiimide and, when two or more carbodiimide groups are present, polyvalent organic linking groups, which are residues of polyisocyanates, between successive carbodiimide groups;

the ratio A to B respectively being from about 10:90 to 95:5.

4,215,206

FURAN BINDER COMPOSITION

Richard F. Hanesworth, Delaware; Young D. Kim, and Gary A. Tolhurst, both of Columbus, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Mar. 16, 1978, Ser. No. 887,087

Int. Cl.[2] C08L 45/00

U.S. Cl. 525—441 12 Claims

1. A thermosetting foundry hot box binder composition comprising a furan resin and an aromatic polyester polyol, said furan resin comprising a reaction product of (1) an acidic condensation product of urea and formaldehyde and (2) furfuryl alcohol and said aromatic polyester polyol comprising a transesterification product of a dialkyl terephthalate and an aliphatic glycol.

4,215,207

PROCESS FOR THE POLYMERIZATION AND COPOLYMERIZATION OF ETHYLENE, USING A GAS INJECTION DEVICE

Pierre Durand, Neuilly sur Seine; Pierre Charlon, Paris, and Guy Jouffroy, Lillebonne, all of France, assignors to Societe Chimique des Charbonnages-CdF Chimie, Paris, France

Filed Jun. 3, 1976, Ser. No. 692,380

Claims priority, application France, Jun. 3, 1975, 75 17317

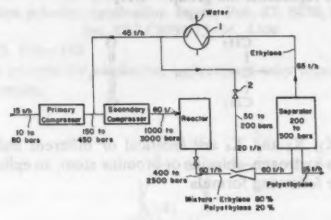
Int. Cl.[2] C08F 10/02

U.S. Cl. 526—64 10 Claims

1. In a process for the polymerisation or copolymerisation of ethylene in a reactor at a pressure greater than 1,000 bars, which process includes cooling the reactor effluent comprising a mixture of polymer and monomer between a pressure-reduction valve located downstream from the reactor and a separator operating at 200 to 500 bars, separating polymer from monomer in the separator and recycling separated monomer to the reactor, the improvement comprising:

(A) injecting fresh monomer into the reactor effluent between the valve and the separator at a temperature lower than that of the reactor effluent and at a pressure below that of the separator using a gas injection device comprising at least one assembly comprising (1) a convergent ejection nozzle of throat cross-section S_1 substantially at

the downstream end of said nozzle, through which arrives at a flow rate Q, motive fluid consisting of reactor effluent; (2) a convergent mixing zone which said fluid enters after passing through said ejection nozzle to be mixed with the monomer injected, which is supplied at a flow rate q, said mixing zone at its upstream end having a larger cross-section than S_1; and (3) a diffuser of throat cross-section S_3 constituting the downstream end of said mixing zone, wherein the ratio Q/S_1 is between 0.20 and 1.35 t/hr.mm^2



and the ratio $(q+Q)/S_3$ is between 0.1 and 0.3 t/hr.mm^2, the pressure of said fluid entering said ejection nozzle being higher than the pressure of said separator and between about 400 and 2,500 bars and the pressure of said injected monomer being not greater than 180 bars whereby the pressure of the fluid is brought down to the pressure of the separator; and

(B) substantially all of said fresh monomer for the polymerization process being supplied by its injection into the reactor effluent using said gas injection device.

4,215,208

THERMOCHROMIC POLYACETYLENES CONTAINING URETHANE GROUPS

Kwok C. Yee, Randolph; Anthony F. Preziosi, Ledgewood; Gordhanbhai N. Patel; Ronald R. Chance, both of Morris Plains; Granville G. Miller, Morristown, and Ray H. Baughman, Morris Plains, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Oct. 5, 1977, Ser. No. 839,678

Int. Cl.^{2} C08L *49/00*

U.S. Cl. 526—285 **14 Claims**

1. A thermochromic polyacetylene composition selected from the group consisting of

(1) polydiacetylenes obtained by polymerizing monomers having the following formula:

(A) RHNOCO—$(CH_2)_n$—C≡C—C≡C—$(CH_2)_n$—OCONHR′ wherein

(a) n is 4 and R and R′ can be the same or different and are isopropyl, n-octadecyl, linear C_1–C_4 p- or m-alkylphenyl, o- or m-chlorophenyl or linear C_1–C_4 monochloroalkyl;

(b) n is 3 and R and R′ can be the same or different and are, linear C_1–C_4 m-alkylphenyl, m- or p-chlorophenyl;

(c) n is 2 and R and R′ can be the same or different and are linear C_1–C_4 m-alkylphenyl, p-methoxyphenyl or linear C_1–C_4 m-alkoxyphenyl;

(2) polyacetylenic network polymers obtained by 1,4-addition of crosslinkable polyacetylenes having the following formulas:

(B) [OCONH$(CH_2)_6$—NHOCO$(CH_2)_n$—C≡C—C≡C—$(CH_2)_2$—C≡C—C≡C—$(CH_2)_n$]$_x$ wherein x is large and n is an integer from 2–6;

(C) {OCONH-$(CH_2)_6$—NHOCO$(CH_2)_n$—[C≡C—C≡C—$(CH_2)_2$]$_2$C≡C—C≡C—$(CH_2)_n$}$_x$ wherein x is large and n is 3; and copolymers formed of the above formulas (B), and (C) where n is 3;

(3) partially polymerized acetylenic compounds containing from about 0.1 to about 50 weight percent polymer obtained by polymerizing acetylenic compositions having the following formulas:

(C) {OCONH—$(CH_2)_6$—NHOCO$(CH_2)_n$[C≡C—C≡C—$(CH_2)_2$]$_2$C≡C—C≡C—$(CH_2)_n$}$_x$ wherein x is large and n is 2 or 4;

(D) RNHOCO$(CH_2)_n$—C≡C—C≡C—$(CH_2)_n$—OCONHR′ wherein

(a) n is 4 and R and R′ are p-chlorophenyl,

(b) n is 3 and R and R′ can be the same or different and are linear C_4–C_{18} alkyl, linear C_1–C_4 o-alkoxyphenyl or linear C_1–C_4 o-alkylphenyl;

(c) n is 2 and R and R′ can be the same or different and are linear C_2–C_{18} alkyl, alkoxy- or m-chlorophenyl;

(d) n is 1 and R and R′ can be the same or different and are linear C_6–C_{18} alkyl;

(E) RNHOCO—$(CH_2)_n$—C≡C—C≡C—$(CH_2)_2$—C≡C—C≡C—$(CH_2)_n$—OCONHR′ wherein

(a) n is 4 and R and R′ can be the same or different and are linear C_1–C_{18} alkyl;

(b) n is 3 and R and R′ can be the same or different and are linear C_1–C_{18} alkyl;

(c) n is 2 and R and R′ can be the same or different and are linear C_2–C_{18} alkyl;

(F) RNHOCO—$(CH_2)_n$—[C≡C—C≡C—$(CH_2)_2$]$_2$—C≡C—C≡C—$(CH_2)_n$—OCONHR′ wherein

(a) n is 4 and R and R′ can be the same or different and are linear C_2–C_{18} alkyl;

(b) n is 3 and R and R′ can be the same or different and are linear C_1–C_{18} alkyl;

(c) n is 2 and R and R′ can be the same or different and are linear C_1–C_{18} alkyl or phenyl; and

(G) [HO—$(CH_2)_n$—C□C—C≡C—$(CH_2)_2$—C≡C]$_2$ wherein n is 2 or 3.

4,215,209

ANAEROBIC CURING COMPOSITION AND PROCESS FOR PREPARING SAME

Dilip K. Ray-Chaudhuri, Bridgewater, and Eric A. Meier, North Brunswick, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Jun. 22, 1979, Ser. No. 50,988

Int. Cl.^{2} C08F *22/14*

U.S. Cl. 526—292 **14 Claims**

1. In a process for preparing an anaerobic curing composition of the type wherein a homogeneous mixture is formed consisting essentially of at least one polymerizable acrylate ester, a free-radical inhibitor, a chelator and an accelerator system, and wherein said mixture is maintained at a temperature of at least about 20° C. for a period of time sufficient to provide said composition with anaerobic curing properties and with at least 25 ppm. of active oxygen, the improvement which comprises incorporating in the composition as the accelerator system therefor at least an effective amount of an aromatic tertiary amine and an N-substituted sulfonamide of the general formula:

$$R—SO_2—NH—SO_2—R$$

wherein the R groups independently represent an unsubstituted or substituted hydrocarbon radical.

4,215,210

NOVEL α-GLYCOL RESIN COMPOSITION AND PROCESS FOR ITS PREPARATION

Kiyoaki Okayama, and Yojiro Yamamoto, both of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Jun. 9, 1978, Ser. No. 914,161

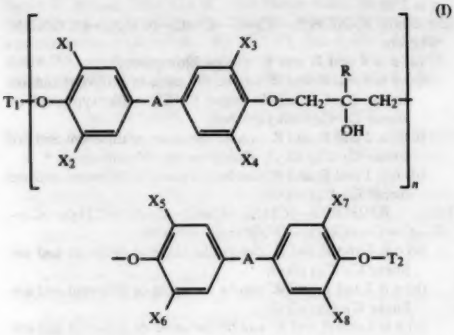
Claims priority, application Japan, Jun. 13, 1977, 52/68926

Int. Cl.^{2} C08G *65/28, 59/06*

U.S. Cl. 528—93 **19 Claims**

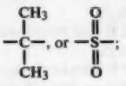
1. A process for preparing an α-glycol resin composition having a viscosity, measured at 25° C. by the Gardner-Holdt

method for a 40% by weight solution in butyl carbitol of C to Z_8 and expressed by the following formula

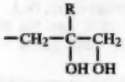


(I)

wherein A represents the group $—CH_2—$,

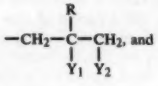


R represents a hydrogen atom or a methyl group; X_1, X_2, X_3, X_4, X_5, X_6, X_7 and X_8 are identical or different and each represent a hydrogen, chlorine or bromine atom; T_1 and T_2 represent terminal groups which are identical or different and are atoms or atomic groupings selected from the group consisting of

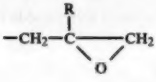


(T-1)

(T-2) a hydrogen atom (—H),

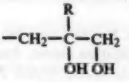


(T-3)

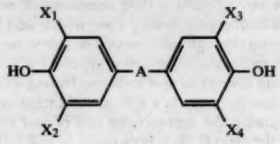


(T-4)

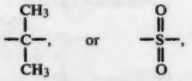
in which R is as defined above, one of Y_1 and Y_2 represents a hydroxyl group and the other represents a chlorine or bromine atom; and n represents the average degree of polymerization of the resin which is a positive number greater than 0, and at least 40 mole% of its entire terminal groups (the sum of T_1 and T_2) consists of α-glycol groups of the following formula



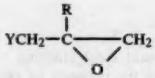
which comprises reacting a dihydric phenol compound expressed by the following formula



wherein A represents the group $—CH_2—$,



and X_1, X_2, X_3 and X_4 are identical or different and each represent a hydrogen, chlorine or bromine atom, an epihalohydrin of the following formula



wherein R represents a hydrogen atom or a methyl group and Y represents a chlorine or bromine atom, and at least 4 moles, per mole of the epihalohydrin, of water in the presence of an etherification catalyst for the dihydric phenol compound and epihalohydrin, and reacting the resulting product with an alkali metal hydroxide.

4,215,211

POLYMERIZATION OF 2-PYRROLIDONE WITH CO_2/SO_2

Mitchell Danzik, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 749,854, Dec. 13, 1976, abandoned, which is a continuation of Ser. No. 575,917, May 9, 1975, abandoned. This application Jan. 23, 1978, Ser. No. 871,272

Int. Cl.[2] **C08G** *69/24*

U.S. Cl. 528—313 **2 Claims**

1. A process for the polymerization of 2-pyrrolidone to produce a polymer capable of being formed into filaments suitable for making textiles, which process comprises contacting the 2-pyrrolidone under substantially anhydrous conditions with a catalyst system consisting essentially of an alkali metal pyrrolidone, carbon dioxide and sulfur dioxide and wherein the combined mol percent carbon dioxide plus sulfur dioxide is 0.02–30, based on 2-pyrrolidone, and the mol ratio of carbon dioxide to sulfur dioxide is in the range of about 1:0.3–0.5.

4,215,212

REGENERATED CELLULOSE CONTAINING CROSS LINKED SODIUM LIGNATE OR SODIUM LIGNOSULFONATE

Neal E. Franks, Suffern, N.Y., assignor to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 887,793, Mar. 17, 1978, which is a continuation-in-part of Ser. No. 706,995, Jul. 20, 1976, abandoned. This application Apr. 9, 1979, Ser. No. 27,977

Int. Cl.[2] **C08B** *15/10, 16/00;* **D01F** *2/00*

U.S. Cl. 536—57 **6 Claims**

1. A regenerated cellulose product containing from about 1% by weight to about 40% by weight, based on the weight of cellulose, of a sodium lignate cross linked with at least about 3.8% by weight of formaldehyde, a sodium lignosulfonate cross linked with at least about 10 % by weight of formaldehyde, an aliphatic ether of the said cross linked products, or mixtures thereof which is substantially insoluble in the bath

used to regenerate the cellulose from viscose wherein said sodium lignate or said sodium lignosulfonate contains not more than about 5% sulfur.

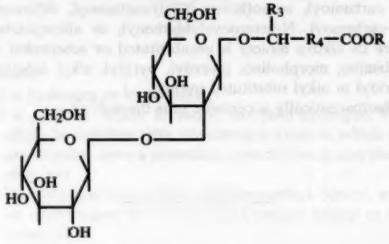
4,215,213

PROCESS FOR PRODUCING A GLYCOLIPID ESTER

Shigeo Inoue, Saitama; Yoshiharu Kimura, Ichikawa, and Manzo Kinta, Funabashi, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1978, Ser. No. 962,693
Claims priority, application Japan, Feb. 17, 1978, 53-17400
Int. Cl.[2] C07H 15/06, 3/04
U.S. Cl. 536—115 **10 Claims**

1. A process for producing a glycolipid ester represented by the formula,



wherein R_3 represents hydrogen or methyl, R_4 represents a saturated or unsaturated hydrocarbon group having 12 to 16 carbon atoms when R_3 is a hydrogen atom, or R_4 represents a saturated or unsaturated hydrocarbon group having 11 to 15 carbon atoms when R_3 is a methyl group, and R represents a saturated or unsaturated alkyl group having 2 to 20 carbon atoms, which comprises: subjecting Sophorolipid to methanolysis and methylation by reacting said Sophorolipid with methanol in the presence of a strong acid thereby forming an ester mixture of methyl 1-[(2'-O-β-D-glucopyranosyl-β-D-glucopyranosyl)oxy]-alkanoate and -alkenoate; and subjecting said mixture to ester interchange by reacting said ester mixture with an alcohol represented by the formula

ROH

wherein R is the same as defined above.

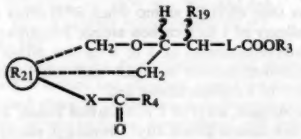
4,215,214

ENLARGED-HETERO-RING PROSTACYCLIN ANALOGS WITH 5-HALO FEATURE

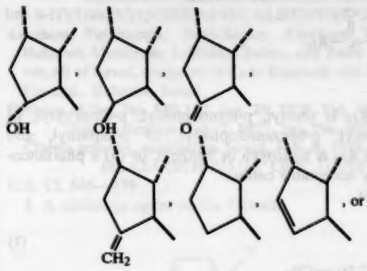
Robert C. Kelly, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 819,941, Jul. 28, 1977, Pat. No. 4,124,599, which is a continuation-in-part of Ser. No. 725,547, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,771, Aug. 23, 1976, abandoned. This application Aug. 21, 1978, Ser. No. 935,300
Int. Cl.[2] C07D 311/02
U.S. Cl. 542—426 **25 Claims**

1. A compound of the formula



wherein (R_{21}) is



wherein L is

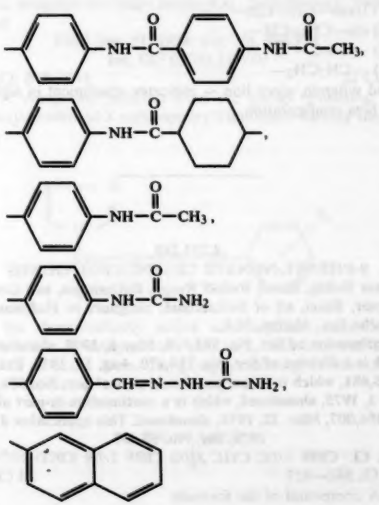
(1) $-(CH_2)d-C(R_2)_2-$
(2) $-CH_2-O-CH_2-Y-$ or
(3) $-CH_2CH=CH-$

wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, and Y is a valence bond, $-CH_2-$, or $-(CH_2)_2-$,

wherein Q is

wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,

wherein R_3 is (a) hydrogen, (b) alkyl of one to 12 carbon atoms, inclusive, (c) cycloalkyl of 3 to 10 carbon atoms, inclusive, (d) aralkyl of 7 to 12 carbon atoms, inclusive, (e) phenyl, (f) phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive,



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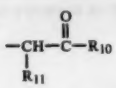
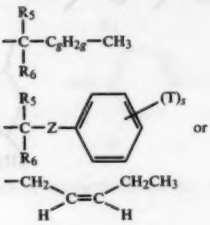


(m)

wherein R_{10} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, and wherein R_{11} is hydrogen or benzoyl, or (n) a pharmacologically acceptable cation,

wherein R_4 is



(1)

(2)

or

(3)

wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between $-CR_5R_6-$ and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6- and the phenyl ring;

wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $-OR_7-$ wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different;

wherein R_{19} is chloro, bromo, or iodo; and

wherein X is

(1) trans—CH=CH—

(2) cis—CH=CH—

(3) —C≡C— or

(4) $-CH_2CH_2-$

and wherein wavy line ~ indicates attachment in alpha or beta configuration.

4,215,215

9-PHENYL-NONATE TRAENE COMPOUNDS

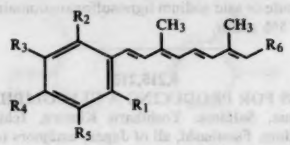
Werner Bollag, Basel; Rudolf Ruegg, Bottmingen, and Gottlieb Ryser, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 903,438, May 8, 1978, abandoned, which is a division of Ser. No. 714,170, Aug. 13, 1976, Pat. No. 4,105,681, which is a continuation-in-part of Ser. No. 601,148, Aug. 1, 1975, abandoned, which is a continuation-in-part of Ser. No. 454,007, Mar. 22, 1974, abandoned. This application Jul. 6, 1979, Ser. No. 55,437

Int. Cl.[2] C09F 5/00; C11C 3/00; C09F 5/08; C07D 207/04

U.S. Cl. 542—427 **30 Claims**

1. A compound of the formula:



wherein R_1 and R_2 are lower alkyl; R_3 is hydrogen, lower alkyl, lower alkoxy, lower alkenyloxy, nitro, amino, lower alkylamino, lower alkanoylamino or N-heterocyclyl; R_4 is lower alkoxy; R_5 is hydrogen, lower alkyl, lower alkenyl, lower alkoxy, lower alkenyloxy, nitro, amino, lower alkanoylamino, lower alkylamino or N-heterocyclyl; and R_6 is alkanoyloxymethylene, alkenyloxycarbonyl, alkynyloxycarbonyl, carbamoyl, mono(lower alkyl)-carbamoyl, di(lower alkyl)-carbamoyl, N-heterocyclylcarbonyl, or alkoxycarbonyl where its alkoxy moiety is unsubstituted or substituted with alkylamino, morpholino, piperdyl, pyridyl, alkyl substituted piperidyl or alkyl substituted pyridyl,

or pharmaceutically acceptable salts thereof.

4,215,216

7,8-DIHYDRO-2,5,8-TRISUBSTITUTED-7-OXO-PYRIDO[2,3-D]PYRIMIDINE-6-CARBOXYLIC ACID DERIVATIVES

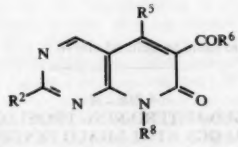
Anthony C. Scotese, King of Prussia; Robert L. Morris, Devon, and Arthur A. Santilli, Havertown, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Apr. 18, 1979, Ser. No. 31,256

Int. Cl.[2] C07D 471/04

U.S. Cl. 544—117 **29 Claims**

1. A compound of the formula:



in which

R^2 is hydrogen, hydroxy, alkyl of 1 to 6 carbon atoms, alkylthio of 1 to 6 carbon atoms, phenyl, 4-methoxyphenyl, 4-chlorophenyl, 1-pyrrolidinyl or methylphenylamino;

R^5 is hydroxy, alkylamino of 1 to 6 carbon atoms, 2-hydroxyethylamino, 2-alkoxyethylamino of 3 to 8 carbon atoms, dialkylamino wherein each alkyl group contains from 1 to 6 carbon atoms, 4-methyl-1-piperazinyl, 4-morpholinyl or 1-pyrrolidinyl when R^2 is other than alkylthio and R^8 is other than alkyl, or amino when R^8 is other than alkyl;

R^6 is alkoxy of 1 to 6 carbon atoms, 2-hydroxyethylamino, 2-alkoxyethylamino of 3 to 8 carbon atoms or 2-(dialkylamino)ethylamino in which each alkyl group contains from 1 to 6 carbon atoms; and

R^8 is hydrogen, alkyl of 1 to 6 carbon atoms, 2-alkoxyethyl of 3 to 6 carbon atoms, allyl, propargyl, phenyl, 4-methoxyphenyl, 4-chlorophenyl, benzyl, 4-methoxybenzyl, 4-chlorobenzyl, 4-(4-morpholinyl)phenyl or piperonyl.

4,215,217
PROCESS FOR PREPARING 4-SUBSTITUTED IMIDAZOLE COMPOUNDS

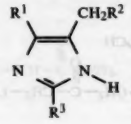
Joseph J. Lewis, and Robert L. Webb, both of West Chester, Pa., assignors to SK&F Lab Co., Carolina, P.R.

Division of Ser. No. 771,044, Feb. 22, 1977, Pat. No. 4,119,781, which is a continuation-in-part of Ser. No. 626,948, Oct. 29, 1975, abandoned. This application Jun. 14, 1978, Ser. No. 915,497

Int. Cl.[2] C07D *233/64, 233/84, 401/06, 413/06*

U.S. Cl. 544—139 6 Claims

1. A process for preparing a compound of the formula:



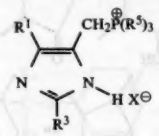
in which:

R^1 is hydrogen or lower alkyl;

R^2 is $—NR^6R^7$ where R^6 and R^7 are each hydrogen, lower alkyl, or together with the nitrogen atom to which they are attached form a piperidine, pyrrolidine or morpholine ring; and

R^3 is hydrogen, lower alkyl, trifluoromethyl, benzyl, amino or $—SR^4$ where R^4 is lower alkyl, phenyl, benzyl or chlorobenzyl,

comprising reacting a compound of the formula:



in which:

R^1 and R^3 are defined as above;

R^5 is lower alkyl or phenyl; and

X is halo,

with a compound of the formula $R^2—H$ where R^2 is defined as above in an organic solvent under basic conditions.

4,215,218
DIRECT REACTION OF ANILINES WITH OLEFINS

Steven E. Diamond, Randolph, and Frank Mares, Whippany, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Sep. 19, 1977, Ser. No. 834,640

Int. Cl.[2] C07D *215/06;* C07C *87/62*

U.S. Cl. 546—162 3 Claims

1. Process of producing N-ethylaniline and quinaldine by direct reaction of aniline and ethylene, consisting essentially of heating in liquid phase in the presence or absence of a solvent selected from tetrahydrofuran, isopropanol and benzene, the reactants aniline, ethylene dissolved in the liquid phase, and a dissolved complex formed between said aniline and rhodium.

4,215,219
REAGENTS FROM PHENOLIC AND 8-HYDROXYQUINOLINIC ALDEHYDE OXIMES

Avraham Patchornik, Ness-Ziona; Abraham Warshawsky, Rehovot; Matityahu Fridkin, Cholon, and Rami Kalir, Rehovot, all of Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

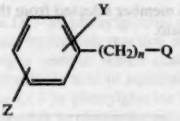
Division of Ser. No. 545,220, Jan. 29, 1975, Pat. No. 4,085,261. This application Jun. 2, 1977, Ser. No. 802,897

Claims priority, application Israel, Feb. 8, 1974, 44168

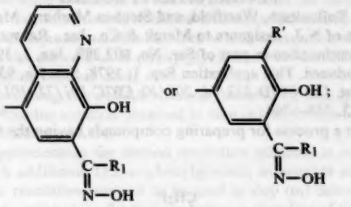
Int. Cl.[2] C07D *215/14;* C07C *119/00*

U.S. Cl. 546—179 4 Claims

1. A chelating agent of the formula



wherein Z is alkyl or aralkyl, the aliphatic portion of which being long-chain alkyl and the aryl portion of which being terminal phenyl; Q is



R_1 is H, alkyl or aryl; R' is H, alkyl, aralkyl, hydrogen, nitro, carbonyl or carboxaldehyde; n is an integer of from 1–15; and Y is H.

4,215,220
1-(2-OXYSUBSTITUTED-3-ANILINOPROPYL)-IMIDAZOLES

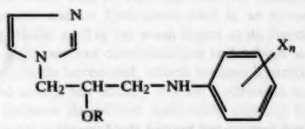
Carl Richter, and Georg Feth, both of Schaffhausen, Switzerland, assignors to Cilag-Chemie A.G., Schaffhausen, Switzerland

Filed Sep. 11, 1978, Ser. No. 940,911

Int. Cl.[2] C07D *233/60*

U.S. Cl. 548—341 22 Claims

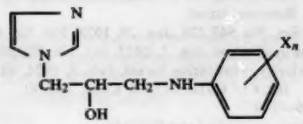
1. A compound selected from the group consisting of a 1-(2-oxysubstituted-3-anilinopropyl)-imidazole having the formula:



and the therapeutically active acid addition salts thereof wherein n is an integer from zero to 3, X is halo and R is a member selected from the group consisting of loweralkyl, benzyl, mono-, di- and trihalobenzyl, and

in which R_1 is a member selected from the group consisting of hydrogen and halo.

16. A compound selected from the group consisting of 1-(2-hydroxy-3-anilinopropyl)-imidazole having the formula:



and the alkali metal salts thereof wherein n is an integer from zero to 3 and X is a member selected from the group consisting of hydrogen and halo.

4,215,221

FLUORINATION PROCESS

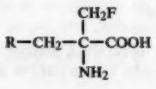
Janos Kollonitsch, Westfield, and Stephen Marburg, Metuchen, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 802,389, Jun. 1, 1977, abandoned. This application Sep. 1, 1978, Ser. No. 939,032

Int. Cl.[2] C07D *233/64, 209/20;* **C07C** *101/72, 101/77*

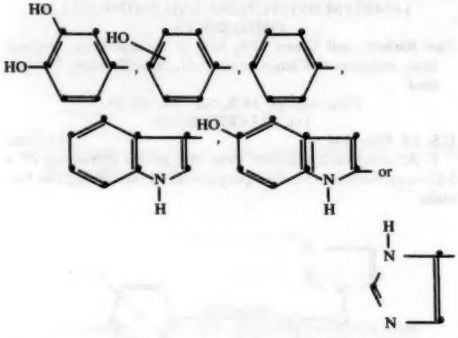
U.S. Cl. 548—344 **6 Claims**

1. In a process for preparing compounds having the formula

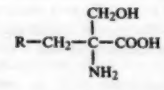


(I)

wherein R is



by reacting a compound having the formula



(II)

with SF_4 in liquid HF at temperatures ranging from about −80° C. to about 20° C., the improvement which comprises adding $AlCl_3$ to the reaction system.

4,215,222

6-KETO PROSTAGLANDIN DERIVATIVES

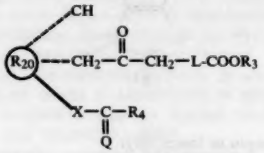
Udo F. Axen, Plainwell, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 819,857, Jul. 28, 1977, Pat. No. 4,158,667, which is a continuation-in-part of Ser. No. 725,548, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,972, Aug. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 655,110, Feb. 4, 1976, abandoned. This application Nov. 9, 1978, Ser. No. 959,400

Int. Cl.[2] C07C *177/00*

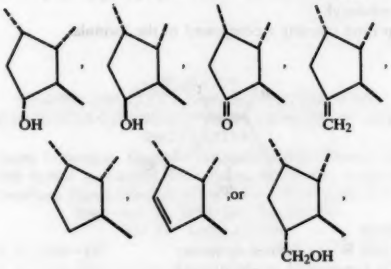
U.S. Cl. 560—53 **145 Claims**

1. A compound of the formula



or a mixture comprising that compound and the enantiomer thereof

wherein is



wherein L is

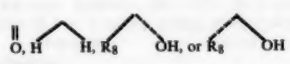
(1) $-(CH_2)_d-C(R_2)_2-$

(2) $-CH_2-O-CH_2-Y-$ or

(3) $-CH_2CH=CH-$

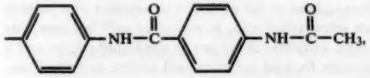
wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, and Y is a valence bond, $-CH_2-$ or $-(CH_2)_2-$,

wherein Q is



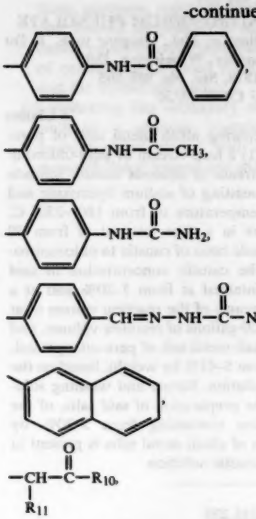
wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,

wherein R_3 is (a) hydrogen, (b) alkyl of one to 12 carbon atoms, inclusive, (c) cycloalkyl of 3 to 10 carbon atoms, inclusive, (d) aralkyl of 7 to 12 carbon atoms, inclusive, (e) phenyl, (f) phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive,



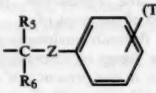
(g)

-continued



wherein R_{10} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, and wherein R_{11} is hydrogen or benzoyl, or (n) a pharmacologically acceptable cation,

wherein R_4 is



wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6- and the phenyl ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_7— wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2 or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different; and wherein X is

(1) trans-CH=CH-
(2) cis-CH=CH-
(3) -C≡C- or
(4) -CH_2CH_2—;

including the lower alkanoates thereof.

4,215,223

PROCESS FOR THE PREPARATION OF D(-)αPHENYLGLYCINE

Gerard Kessels, Slekkerstraat 8, Echt (L.), Netherlands

Filed Oct. 16, 1978, Ser. No. 951,483

Claims priority, application Netherlands, Oct. 18, 1978, 7711396

Int. Cl.² C07B *20/00*

U.S. Cl. 562—401 **4 Claims**

1. A process for the resolution and preparation of D (−)α-phenylglycine, which comprises:

(a) providing a first resolution mixture of D,L-α-phenylglycine in aqueous solution with D(+) camphorsulfonic acid;
(b) resolving the D,L-α-phenylglycine in the provided mixture, in the presence of a strong acid;
(c) precipitating the acid salt of the strong acid and D(−)α-phenylglycine in the resolution mixture obtained in step (b);
(d) separating the precipitated salt from the resolution mixture, leaving an aqueous residue which comprises L(+)α-phenylglycine in solution with D(+) camphorsulfonic acid;
(e) dissolving the separated salt in water, obtained as specified in step (i) below;
(f) hydrolysing the dissolved salt, to obtain D(−)α-phenylglycine;
(g) separating the D(−)α-phenylglycine obtained in step (f) from the product hydrolysis reaction mixture obtained in step (f), leaving a residue which comprises the salt of D(−) camphorsulfonic acid in aqueous solution;
(h) racemizing the L(+)α-phenylglycine in the residue solution left from step (d), to obtain the salt of D,L-α-phenylglycine in solution, in the presence of a base selected from the group consisting of sodium and potassium hydroxide;
(i) stripping water from the aqueous residue of step (d) while carrying out the racemization of step (h) and using the stripped water to dissolve the salt in step (e) above;
(j) separating potassium or sodium sulfite from the racemization reaction mixture obtained after steps (h) and (i), leaving an aqueous residue mixture which comprises in solution the salt of D,L-α-phenylglycine and the salt of D(+) camphorsulfonic acid;
(k) combining the residue solution obtained in step (j) with the residue solution obtained in step (g), to form a second resolution mixture;
(l) supplementing the second resolution mixture, as needed, with additional D,L-α-phenylglycine, to provide another first resolution mixture to be used in step (m) below;
(m) repeating steps (b)–(m), inclusive, a plurality of times to obtain the desired D(−)α-phenylglycine in the step (g).

4,215,224

REMOVAL OF DISSOLVED DISODIUM TEREPHTHALATE FROM AQUEOUS SOLUTION ALSO CONTAINING SODIUM HYDROXIDE

Franklin D. Wallace, and John C. Carr, both of Decatur, Ala., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 11, 1978, Ser. No. 968,507

Int. Cl.² C07C *51/42*

U.S. Cl. 562—485 **6 Claims**

1. A method for the recovery of sodium hydroxide for reuse in removing terephthalic acid adhering to inner walls of elements of apparatus used in the production of terephthalic acid including catalytic liquid phase air oxidation of p-xylene through drying of the terephthalic acid product wherein such removal of adhering terephthalic acid is accomplished by washing the walls with an aqueous solution containing 5 to 6 weight percent sodium hydroxide used in an amount to dissolve terephthalic acid in the wash liquor as its disodium salt in a 2 to 3 weight percent concentration and which leaves some sodium hydroxide unreacted; which sodium hydroxide recovery method comprises adding sodium hydroxide to the wash liquor to increase its sodium hydroxide content to 12 to 14 weight percent whereat from 94 percent up to substantially all of the disodium terephthalate precipitates, separating the aqueous solution containing 12 to 14% sodium hydroxide from the precipitate, dividing the separated solution containing 12 to 14 weight percent sodium hydroxide into a major portion comprising more than 65% of such separated solution and a minor portion comprising less than 35% of such separated solution, diluting the minor portion of such separated solution with water to a sodium hydroxide content in the range of from 5 up to 6 weight percent, recycling said diluted minor portion of such separated solution to the washing of terephthalic acid

adhering on inner walls of production apparatus, concentrating the major portion of such separated solution of 12 to 14 percent sodium hydroxide to increase its concentration to 50 weight percent.

4,215,225

PROCESS FOR PREPARING AMMONIUM SALTS OF ALKANOIC ACIDS

Andrew B. Funk, and Max B. Williams, both of Memphis, Tenn., assignors to W. R. Grace & Co., New York, N.Y.

Continuation of Ser. No. 745,840, Nov. 29, 1976, abandoned. This application Jul. 28, 1978, Ser. No. 929,080

Int. Cl.[2] C07C *51/52*

U.S. Cl. 562—606 **7 Claims**

1. In a process for preparing an ammonium alkanoate by reacting, in an aqueous medium ammonia and an alkanoic acid having about 1–10 carbon atoms per molecule, the improvement comprising continuously:

(a) feeding a first admixture comprising water, ammonia, and an excess of the alkanoic acid into a tubular reaction zone,

(b) forming a second admixture comprising an aqueous solution of the ammonium alkanoate and unreacted alkanoic acid by passing the first admixture through the tubular reaction zone, said first admixture having a temperature of from about 60° to 140° F. as it enters said reaction zone, said second admixture having a temperature of from about 160° to 260° F. at the exit end of said reaction zone;

(c) passing the second admixture exiting the tubular reaction zone through a tubular cooling zone and cooling the second admixture to a temperature of from about 100° to 180° F.; and

(d) recovering the cooled second admixture.

4,215,226

SELECTIVE HYDROGENATION OF NITROAROMATIC ACETYLENES OVER AN UNSUPPORTED RUS_2 CATALYST

Anatoli Onopchenko, Monroeville; Edward T. Sabourin, Allison Park, and Charles M. Selwitz, Monroeville, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 6, 1978, Ser. No. 958,163

Int. Cl.[2] C07C *79/22, 85/11, 85/24*

U.S. Cl. 568—705 **12 Claims**

1. A process for the production of an aromatic amino compound containing an acetylene group directly connected to an aromatic ring carbon atom which comprises:

contacting a charge stock comprising an aromatic nitroacetylene compound containing (i) at least one nitro group directly connected to an aromatic ring carbon atom and (ii) at least one acetylenic group having at least two carbon atoms, wherein the acetylene group is directly connected to an aromatic ring carbon atom, and wherein the aromatic portion of said aromatic nitro acetylene compound is selected from the group consisting of benzene, naphthalene, bibenzyl, diphenyl, diphenyl oxide, diphenyl sulfide and benzophenone, in an inert solvent with an unsupported catalyst consisting essentially of ruthenium sulfide and in the added presence of free molecular hydrogen under reaction conditions such that:

(a) the aromatic nitroacetylene and solvent are maintained substantially in the liquid phase;

(b) the weight percent of the aromatic nitroacetylene in the inert solvent is from one to about six weight percent;

(c) the reaction temperature is from 60° C. to 140° C.; and

(d) the conversion of said nitroaromatic acetylene is greater than 50 weight percent.

4,215,227

RECOVERY OF PARA-NITROSODIUM PHENOLATE

Richard E. Bockrath, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 27, 1978, Ser. No. 955,505

Int. Cl.[2] C07C *79/26*

U.S. Cl. 568—706 **6 Claims**

1. In the process for preparing alkali metal salts of para-nitrophenol by contacting (1) a feed stream of para-chloronitrobenzene and (2) a feed stream of aqueous caustic solution selected from the group consisting of sodium hydroxide and potassium hydroxide at a temperature of from 180°–250° C. and at autogeneous pressure in a time interval of from 30 seconds to 10 minutes at a mole ratio of caustic to chloronitrobenzene of from 2:1–4:1, the caustic concentration in said aqueous solution being maintained at from 5–20% and at a power input into the feed streams of the reaction system of at least 2.3 horsepower per 1,000 gallons of reaction volume, and filtering and washing the alkali metal salt of para-nitrophenol, the improvement wherein from 5–45% by weight, based on the combined aqueous caustic solution, filtrate and washing solution from said process for the preparation of said salts, of the filtrate and washing solution containing from 5–20% by weight based on the solution of alkali metal salts is present in the feed stream of aqueous caustic solution.

4,215,228

2-FLUORO-2-NITROPROPANEDIOL

Kurt Baum, Pasadena, and Philip T. Berkowitz, Santa Ana, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 14, 1978, Ser. No. 933,365

Int. Cl.[2] C07C *79/16*

U.S. Cl. 568—712 **5 Claims**

1. A process for the production of 2-fluoro-2-nitropropanediol comprised of the steps of:

combining diethyl fluronitromalonate with a compound selected from the group of formaldehyde solutions and paraformaldehyde, in the presence of an alkali metal hydroxide between 10° and −10° C. and separation of the product.

4,215,229

PROCESS FOR ALKYLATING PHENOLIC COMPOUNDS TO PRODUCE ORTHO- AND PARA-MONOALKYLATED PHENOLS AND 2,4- AND 2,6-DIALKYLATED PHENOLS

Nicholas P. Greco, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jun. 15, 1978, Ser. No. 915,715

Int. Cl.[2] C07C *37/20*

U.S. Cl. 568—804 **16 Claims**

1. Process for alkylating phenolic compounds having an available hydrogen in at least the para position to produce a mixture containing predominantly para-monoalkylated phenols with a smaller quantity of ortho-monoalkylated phenols and dialkylphenols, comprising:

(a) reacting the phenolic compound with a saturated aliphatic aldehyde having one to about ten carbon atoms and a secondary amine having one to about ten carbon atoms and having a basic dissociation constant of less than around 3.6, wherein the amount of the aldehyde and the secondary amine are in stoichiometric amounts and the amount of the phenolic compound is in a stoichiometric or excess of the stoichiometric amount, and in the liquid phase and at a temperature in the range of around 0° C. to around 20° C. to produce a mannich base type aminoalkylated phenol;

(b) contacting the mannich base type aminoalkylated phenol with hydrogen at a pressure no higher than around 150 psig in a glass-lined vessel at a temperature in the range of about 120° to about 140° C. in the presence of a noble metal catalyst selected from the group consisting of palla-

dium, platinum, rubidium, rhodium and iridium or a mixture thereof to produce a mixture containing predominantly para-monoalkylated phenol, with smaller amounts of ortho-monoalkylated phenol and dialkylated phenols and the secondary amine;

(c) separating the secondary amine from the mixture to produce a mixture containing predominantly para-monoalkylated phenol with smaller amounts of ortho-monoalkylated phenol and dialkylated phenols.

4,215,230

PRODUCTION OF IONONES AND IRONES BY THERMAL REARRANGEMENT OF PROPARGYLIC ALCOHOLS

Takashi Ohnishi; Yoshiji Fujita; Michihiro Ishiguro, and Takashi Nishida, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

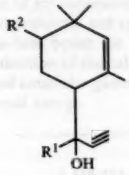
Filed May 23, 1978, Ser. No. 908,818

Claims priority, application Japan, May 23, 1977, 52-60112; May 23, 1977, 52-60113

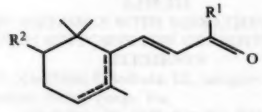
Int. Cl.[2] C07C *45/00, 33/05, 33/04, 33/02*

U.S. Cl. 568—341 **8 Claims**

1. A method for the preparation of ionones and irones which comprises thermally rearranging a propargylic alcohol of the structural formula (II) to obtain a compound of the structural formula (I):



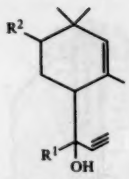
(II)



(I)

wherein R^1 is lower alkyl; R^2 is a member selected from the group consisting of hydrogen and methyl; and the dotted line in the structural formula (I) denotes that a double bond exists in either one or the other of the positions indicated.

7. A propargylic alcohol of the structural formula (II):



(II)

wherein R^1 is lower alkyl; and R^2 is a member selected from the group consisting of hydrogen and methyl.

4,215,231

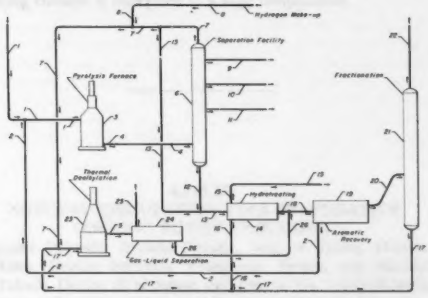
CO-PRODUCTION OF ETHYLENE AND BENZENE

Robert F. Raymond, Arlington Hts., Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 894,264, Apr. 7, 1978, Pat. No. 4,167,533. This application May 29, 1979, Ser. No. 43,210

Int. Cl.[2] C07C *3/30*

U.S. Cl. 585—251 **14 Claims**



1. A process for the co-production of ethylene and benzene from a hydrocarbonaceous feedstock which comprises:

(a) charging said feedstock to a thermal cracking zone at conditions selected to convert paraffinic hydrocarbons into lower boiling, normally vaporous, hydrocarbons;

(b) introducing the thermal cracking zone effluent into a first separation zone and separating a hydrogen-rich vaporous phase, ethylene, and a normally liquid phase containing aromatic hydrocarbons;

(c) recovering the separated ethylene;

(d) introducing said normally liquid phase into a second separation zone, concentrating the aromatic hydrocarbons therein, and separating unconverted non-aromatic hydrocarbons;

(e) introducing said aromatic hydrocarbons into a third separation zone and separating benzene and alkylaromatic hydrocarbons therein;

(f) recovering the separated benzene;

(g) reacting said alkylaromatic hydrocarbons in admixture with at least a portion of said hydrogen-rich vaporous phase in a dealkylation reaction zone at conditions selected to convert said alkylaromatic hydrocarbons into benzene; and,

(h) introducing the dealkylation zone effluent into said second separation zone in combination with the aforesaid normally liquid phase introduced thereto.

4,215,232

PRODUCTION OF HYDRAULIC CEMENTS AND CEMENT-FORMING MATERIALS

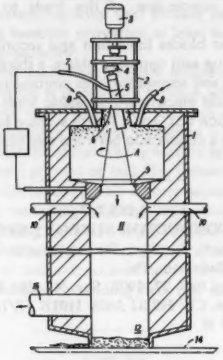
Jozef K. Tylko, Faringdon, England, assignor to The Rugby Portland Cement Company Limited, Rugby, England

Division of Ser. No. 848,031, Nov. 3, 1977, Pat. No. 4,152,169. This application Feb. 8, 1979, Ser. No. 10,427

Claims priority, application United Kingdom, Nov. 4, 1976, 45839/76; Jul. 9, 1977, 28881/77

Int. Cl.[2] H05H *1/00, 1/24*

U.S. Cl. 13—2 P **2 Claims**



1. Apparatus for the production of hydraulic cements and pozzolanic materials comprising means for mixing and blending a calcareous material and a carbonaceous material containing silica, means for drying and grinding such blend to a comminuted condition, means for supplying hot gas to said drying and grinding means, a plasma reactor of the type in which at least one plasma gun orbits about a substantially vertical axis and is directed obliquely to said vertical axis and towards an opposed counter-electrode, said reactor including means for supplying a curtain of comminuted material to a cone of expanded precessive plasma developed within said plasma reactor, a feed preheater arranged between said drying and grinding means and said supplying means, granulating means for granulating material emerging from said plasma zone, means for passing a stream of air successively through said granulating means, said feed preheater and said feed drying and grinding means, a waste-heat boiler for recovery of heat energy released in the combustion of the calorific values of the carbonaceous material and means for generating electricity by use of the recovered thermal energy.

4,215,233

HEATING ASSEMBLY WITH VIBRATION DAMPENING SHIPPING SUPPORTS FOR GRAPHITE HEATING ELEMENTS

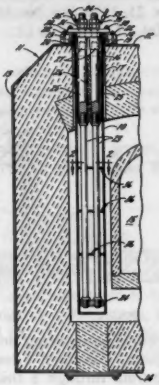
William W. Kastilahn, Caledonia, Ill., assignor to Alco Standard Corporation, Valley Forge, Pa.

Filed Dec. 29, 1978, Ser. No. 974,308

Int. Cl.[2] H05B *3/62;* F27D *11/02*

U.S. Cl. 13—25 **5 Claims**

1. A heating assembly comprising a closed tube, and an elongated rigid electrical resistance heating element disposed in and secured to said tube and having terminals adapted to be connected across a voltage source so as to energize said heating element and raise said heating element to a high temperature, the improvement in said heating assembly comprising, a support member for bracing said heating element against said tube to dampen the vibration of said element during shipment of said assembly thereby preventing damage to said element, said support member comprising a disc telescoped snugly over said heating element and telescoped snugly into said tube, said



disc being made of a material which reduces to ash when said heating element is energized to a high temperature.

4,215,234

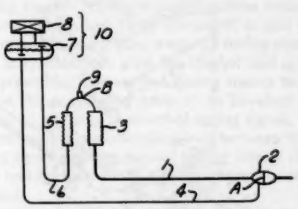
NATURAL CIRCULATION TYPE EVAPORATIVE COOLING POWER CABLE LINE

Hiroaki Hayashi; Kiyoshi Fukuda, both of Tokyo; Hiroshi Kubo, Osaka; Noriyasu Yoshikawa, Osaka, and Hiroshi Takada, Osaka, all of Japan, assignors to The Tokyo Electric Power Company, Tokyo and Sumitomo Electric Industries, Ltd., Osaka, both of, Japan

Filed Jul. 21, 1978, Ser. No. 926,907

Int. Cl.[2] H01B *7/34*

U.S. Cl. 174—15 C **9 Claims**



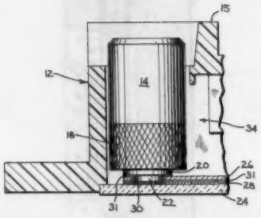
1. A circulation system for a cooling medium in a natural circulation type evaporative cooling electric power cable line wherein a cooling medium passage within the electric power cable line has an inlet and an outlet respectively connected with a cooling unit positioned at a level higher than the cooling medium passage inlet of said electric power cable by means of a feeding pipe and a return pipe and having sealed therein a liquefiable gas cooling medium, and which is characterized by at least a riser portion of the return pipe leading to the cooling unit installed below the level of the cooling medium return passage outlet of said electric power cable and said return pipe provided with means for boosting circulation force to make the cooling medium circulate even in a low load current region not exceeding the current allowable without cooling for that cable.

4,215,235

LEAD FRAME TERMINAL

Lance R. Kaufman, 131 White Oak Way, Mequon, Wis. 53092

Filed Nov. 21, 1978, Ser. No. 962,586
Int. Cl.[2] H05K *1/12*
U.S. Cl. 174—52 PE **3 Claims**



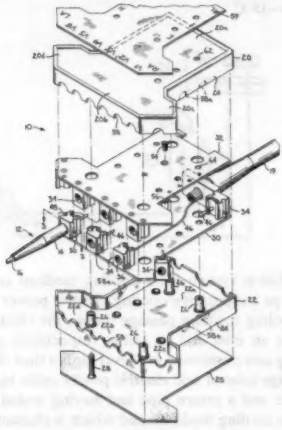
1. A lead frame terminal, comprising an electrically non-conductive heat dissipating substrate, a lead frame element connected to said substrate through a thick film circuit, a terminal stud having means for mounting said stud to said lead frame element, said mounting means including a mounting member and an axially extending projection located at an axial end of said stud adjacent said lead frame element with said mounting member supported by said lead frame element and said axial projection snugly located within a mating opening within said lead frame element, and reflowable electrically conductive material bonding said mounting member to said lead frame element and said axial projection to said substrate and providing a sturdy inter-connection with good heat transfer to said substrate.

4,215,236

JUNCTION BOX FOR ELECTROCARDIOGRAPHIC LEADS

Gerald J. Reiser, Milwaukee, Wis., assignor to Marquette Electronics, Inc., Milwaukee, Wis.

Filed Mar. 24, 1978, Ser. No. 889,635
Int. Cl.[2] H05K *5/04*
U.S. Cl. 174—59 **11 Claims**



1. A junction box for a plurality of electrocardiographic leads comprising:

a pair of opposed plates having a generally T-shaped configuration, said plates being spaced apart by a plurality of lead connector blocks positioned along the periphery of the plates, said connector blocks each being fastened to only one of the plates, said plates being identically formed with respect to shape and the location of the connector blocks on said plates so as to permit internesting of the connector blocks of each of said plates when said plates are brought into the spaced opposed condition, said lead connector blocks having means for receiving said electrocardiographic leads and for making electrical connections therewith;

a multi-conductor cable connected to said connector blocks and exiting said junction box adjacent said plates; and

a housing covering said pair of plates and having openings permitting connection of the leads to the connector blocks;

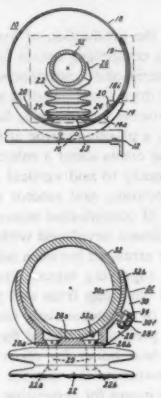
said connector blocks have first and second opposing surfaces abutting said opposing plates, a third surface normal to said first and second surfaces containing said means for receiving said electrocardiographic leads to attach same to the junction box, and a fourth surface having means for establishing a connection between said electrical leads and said cable.

4,215,237

BUS CONDUCTOR SUPPORT SYSTEM

Thomas C. Burtnett, Woodlyn, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Feb. 27, 1978, Ser. No. 881,330
Int. Cl.[2] H02G *5/06*; H01B *17/18*
U.S. Cl. 174—99 B **7 Claims**



1. A bus conductor support system comprising:

(a) a hollow tubular enclosure,

(b) platform means for supporting said enclosure in a fixed position,

(c) a tubular bus conductor disposed within said enclosure in substantially parallel relationship therewith and electrically insulated therefrom,

(d) an insulator assembly disposed within said tubular enclosure supporting said bus conductor and extending radially of said tubular enclosure along a predetermined diameter of said enclosure,

(e) a side-located access opening in said tubular enclosure disposed at one side of said insulator assembly,

(f) insulator assembly securing means removably securing an end portion of said insulator assembly in a fixed position with respect to said enclosure, said insulator assembly securing means being in proximate relation to said side-located access opening;

(g) bus conductor mounting means removably mounting said bus conductor on an opposing end portion of said insulator assembly without requiring any holes in said bus conductor, said mounting means being in abutting relation

with at least a portion of an outer surface of said bus conductor for applying restraining forces to said bus conductor at points distributed over greater than one half of the perimeter of said outer surface, said mounting means including:

(g_1) a first mounting member which is detachably secured to said opposing end portion of said insulator assembly, said first mounting member including an arcuate restraining surface which is in abutting relation with at least a portion of the outer surface of said bus conductor, said first mounting member including a flanged portion extending from said arcuate surface, said first mounting member providing at least some support for said bus conductor;

(g_2) a second mounting member including a restraining surface which is in abutting relation with another portion of the outer surface of said bus conductor, said second mounting member including a flanged portion extending from its restraining surface in juxtaposition to said flanged portion of said first mounting member;

(g_3) means for securing said second mounting member to said first mounting member, said securing means for said mounting members being located in its entirety at one side only of said bus conductor and in proximate relation to said side-located access opening, said latter securing means extending between said flanged portions.

4,215,238

METHOD OF AND APPARATUS FOR PRINTED CHARACTER TRANSMISSION AND RECEPTION

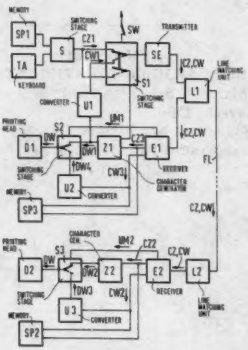
Joachim Heinzl, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 942,915

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1977, 2748218

Int. Cl.² B41J *5/00*; G06K *15/02*; H04L *15/24*

U.S. Cl. 178—23 R **12 Claims**



1. A method of transmitting printed characters from a transmitting station to a receiving station, comprising the steps of:

storing binary character sequences at the receiving station in a character generator;

transmitting data words assigned to the characters from the transmitting station to the receiving station;

receiving and applying the data words to the character generator to produce printing commands;

applying the printing commands to a printing head in the receiving station which has at least one printing element;

storing in a character generator in the transmitting station binary character sequences of characters which at least partially differ from those characters whose binary character sequences are stored in the character generator of the receiving station;

reading binary character sequences from the character generator in the transmitting station;

converting the read binary character sequences into code words;

transmitting the code words in place of the data words from the transmitting station to the receiving station;

receiving and reconverting the code words into binary character sequences;

applying the binary character sequences reconverted from the code words to the printing head as printing commands.

4,215,239

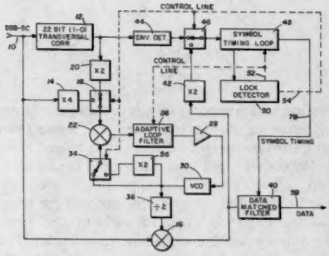
APPARATUS FOR THE ACQUISITION OF A CARRIER FREQUENCY AND SYMBOL TIMING LOCK

Robert S. Gordy, Largo, and David E. Sanders, St. Petersburg, both of Fla., assignors to E-Systems, Inc., Dallas, Tex.

Filed Dec. 5, 1977, Ser. No. 857,754

Int. Cl.² H04B *1/66*

U.S. Cl. 375—114 **12 Claims**



1. Apparatus for the acquisition of a carrier frequency and symbol timing lock, comprising in combination:

carrier recovery means operable in an acquisition mode and data recovery mode and being responsive to an input signal including data bits, a data preamble with symbol timing bits in the data preamble for generating an output frequency locked to the carrier frequency,

symbol timing means operable in an acquisition mode and a data recovery mode and being connected to said carrier recovery means for generating a symbol timing signal that is locked in synchronism with the symbol timing bits of the data preamble, said symbol timing means being responsive in the acquisition mode to an envelope of the input signal to generate the symbol timing signal,

means for detecting a symbol timing lock between the symbol timing signal and the symbol timing bits of the data preamble and for generating a control signal in response thereto, and

control means responsive to the control signal for switching said carrier recovery means and said symbol timing means from the acquisition mode to the data recovery mode.

4,215,240

PORTABLE VOICE SYSTEM FOR THE VERBALLY HANDICAPPED

Carl L. Ostrowski, Sterling Heights, Mich., assignor to Federal Screw Works, Detroit, Mich.

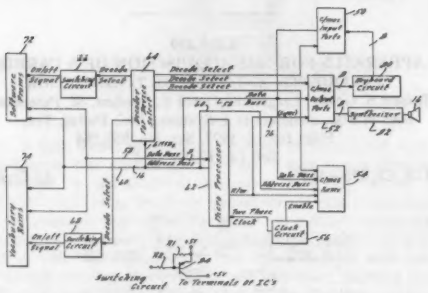
Filed Nov. 11, 1977, Ser. No. 850,669

Int. Cl.² G10L *1/00*

U.S. Cl. 179—1 SM **14 Claims**

1. In a portable artificial voice system for the verbally handicapped, including first memory means having prestored therein digital data identifying phonemes phonetically defining a vocabulary of words, input means for randomly selecting

words from said vocabulary, second memory means for temporarily storing said word selections in the order entered, computer means for reading the selections stored in said second memory means and retrieving from said first memory means the digital data identifying the phonemes phonetically defining said word selections, and synthesizer means responsive to the digital data retrieved by said computer means for synthetically speaking the words identified by said selections by integrating the phonemes identified by said data into intelligible sounding human speech; the method of generating synthesized speech including the steps of: entering via said input means a plurality of encoded word selections into said second memory means,



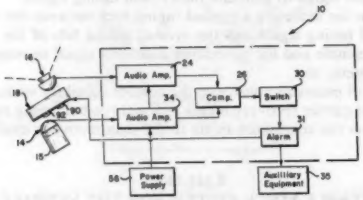
and activating said computer means to repetitively perform the following sequence of steps until the entire message entered via said input means has been synthetically spoken; (1) reading the first (next) encoded word selection stored in said second memory means, (2) accessing the appropriate memory address location(s) in said first memory means by first accessing the intermediary memory address location in said first memory means identified by said encoded word selection, reading the address data contained in said intermediary address location, and then accessing the memory address location(s) identified by said address data, (3) reading the digital data stored in said memory address location(s), and (4) providing said digital data to said synthesizer means.

4,215,241

SOUND OPERATED CONTROL DEVICE

Harry D. Pinkney, Jr., Gardena, Calif., assignor to Frank L. Eppenger, Ojai, Calif.

Filed Oct. 16, 1978, Ser. No. 951,341
Int. Cl.² H04M 9/00
U.S. Cl. 179—1 VC **10 Claims**



1. A sound-operated electrical control device adapted to receive predetermined sounds to activate switching means connected to electrical auxillary equipment upon receipt of predetermined sounds comprising:

a first circuit having first receptor means to receive a predetermined sound and generate a corresponding first electrical signal which is classified to a first polarity with first polarizing means; and,

a second circuit in parallel with said first circuit having second receptor means to receive ambient sound and generate a corresponding second electrical signal which is classified to a second polarity with second polarizing means; and,

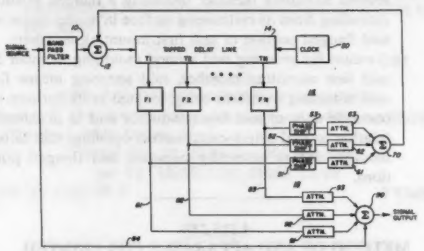
switching means interconnecting said first and second circuits allowing either one or the other of said first and second signals to pass and activate the auxillary equipment, said first and second polarizing means comprising oppositely-poled diodes.

4,215,242

REVERBERATION SYSTEM

Glenn M. Gross, Chicago, Ill., assignor to Norlin Industries, Inc., Lincolnwood, Ill.

Filed Dec. 7, 1978, Ser. No. 967,265
Int. Cl.² G10H 1/04
U.S. Cl. 179—1 J **25 Claims**



1. A reverberation sound producing apparatus comprising:

an input terminal and at least one output terminal;

a delay line having an input coupled to said input terminal and a plurality of output taps;

a feedback path coupling selected irregularly spaced taps of said delay line to said delay line input; and

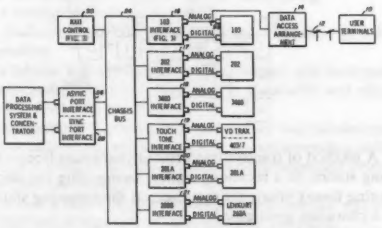
an output path coupling said selected taps to said output terminal.

4,215,243

AUTOMATIC MODEM IDENTIFICATION SYSTEM

Ronald K. Maxwell, Palo Alto, Calif., assignor to Racal-Vadic Inc., Sunnyvale, Calif.

Continuation of Ser. No. 752,205, Dec. 20, 1976, abandoned.
This application Nov. 17, 1978, Ser. No. 961,849
Int. Cl.² H04M 11/00
U.S. Cl. 179—2 DP **11 Claims**



1. The method of identifying a particular modem type from a plurality of modem types having common access to a port over a telephone line, wherein said modem types include at least a first and a second modem type, comprising the steps of:

(a) answering all the incoming calls received over said telephone line with an answering modem of said first type by transmitting for a first time period an answer mark carrier of a frequency which is not only unique to an answering

modem of said first type but is also compatible with any other of said modem types;

(b) monitoring said telephone line during said first time period to detect an originate mark carrier of a frequency unique to a calling modem of said first type;

(c) maintaining communication with said calling modem of said first type upon the condition that the originate mark carrier detected within said first time period is of a frequency unique to a calling modem of said first type;

(d) if no originate mark carrier is detected during said first time period, transmitting an answer mark of a frequency unique to an answering modem of said second type for a second time period;

(e) monitoring said telephone line during said second time period to detect an originate mark carrier of a frequency unique to a calling modem of said second type; and

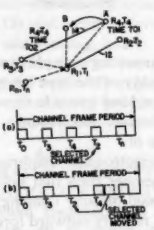
(f) maintaining communication with said calling modem of said second type upon the condition that the originate mark carrier detected within said second time period is of a frequency unique to a calling modem of said second type.

4,215,244

SELF-ADAPTIVE MOBILE SUBSCRIBER ACCESS SYSTEM EMPLOYING TIME DIVISION MULTIPLE ACCESSING

Frank S. Gutleber, Little Silver, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 18, 1978, Ser. No. 970,608
Int. Cl.[2] H04J 3/14
U.S. Cl. 370—116 **9 Claims**



1. In a mobile multiple subscriber access system, the combination therewith of:

first means at a given one of said subscribers for receiving desired communications signals from a desired subscriber during a selected time interval in a frame period;

second means at said given subscriber for detecting the presence of extraneous communications signals from undesired subscribers tending to produce interference with said desired signals from said desired subscriber during said selected time interval as individual subscribers move about in said mobile access system; and

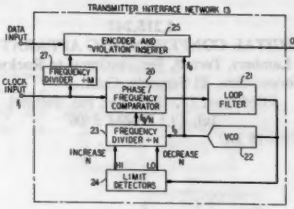
third means at said given subscriber responsive to the presence of said extraneous communications signals which exceed a predetermined signal level to control the timing of said desired communications signals from said desired subscriber to select a different, unused time interval within said frame period for transmission of said desired communications signals.

4,215,245

VARIABLE RATE SYNCHRONOUS DIGITAL TRANSMISSION SYSTEM

Jules A. Bellisio, Wall Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 29, 1978, Ser. No. 974,375
Int. Cl.[2] H04L 7/02
U.S. Cl. 370—84 **3 Claims**



1. A synchronous digital transmission system (12) adapted to operate over a prescribed range of bit rates and to interface with data sources having different data rates,

CHARACTERIZED IN THAT said system comprises:

a transmitter interface network (13) including:

means (20, 21, 23, 24) for phase-locking an integral subharmonic of a variable frequency local oscillator (22) to the clock signal frequency, f_1, of an input data stream, where the range of frequencies of said oscillator falls within the prescribed range of bit rates of said system; and

means (25, 27) for encoding said data stream for operation at a bit rate equal to the frequency of said oscillator and including one code violation at a rate related to the clock signal frequency;

and a receiver interface network including:

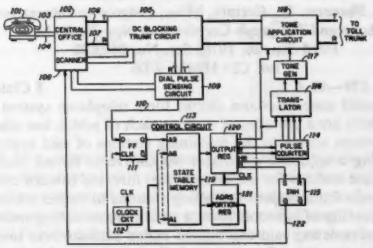
means (31, 32) for decoding said encoded data stream and for recovering the original input data stream and clock signal.

4,215,246

DIAL PULSE SIGNALING ARRANGEMENT

Albert J. Sawyer, Lisle, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 8, 1978, Ser. No. 958,699
Int. Cl.[2] H04M 3/42
U.S. Cl. 179—18 B **10 Claims**



1. A communication system comprising a communication path comprising two signaling conductors, signaling means for generating sequences of dial pulses by periodically changing the conduction state between said two signaling conductors and scanning means responsive to the conduction state between said two signaling conductors for altering said commu-

nication path characterized in that said communication system further comprises:

dial pulse detection means responsive to predetermined changes in the conduction state between said two signaling conductors for generating inhibit signals in response to the first dial pulse of each dial pulse sequence generated by said signaling means; and

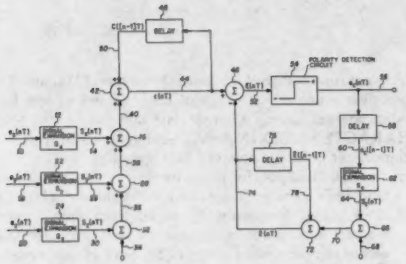
inhibiting means responsive to said inhibit signals for inhibiting said scanning means from detecting the conduction state between said two signaling conductors.

4,215,247

DIGITAL CONFERENCING APPARATUS

Donald L. Lambert, Terrell, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 13, 1978, Ser. No. 960,491
Int. Cl.[2] H04M *3/00*
U.S. Cl. 179—18 BC **6 Claims**



6. Apparatus for combining a plurality of nonlinear delta modulated digital signals into a single nonlinear signal comprising, in combination:

a first plurality of means for supplying nonlinear delta modulated signals to be combined;

a second plurality of means, each connected to a given one of said first plurality, for converting nonlinear delta modulated signals to linear differential PCM signals at output means thereof;

summing means, connected to said output means of said second means, for providing at an output thereof a composite linear differential PCM signal; and

digital integrating means, connected to said output means of said summing means, for providing at an output thereof a linear summed PCM signal.

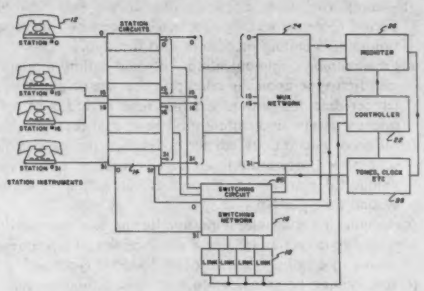
4,215,248

TELEPHONE INTERCOM CIRCUIT

Larry S. Shannon, Jr., Corinth, Miss., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 26, 1978, Ser. No. 946,030
Int. Cl.[2] H04M *9/06*
U.S. Cl. 179—99 A **5 Claims**

1. A solid state intercom circuit for a telephone system in which there are a plurality of stations each of which has selective intercom access to the remaining stations of said system, comprising a sequence controller responsive to sensed conditions at said stations for initiating cycles directed toward completing calls from respective calling stations to called stations over a plurality of intercom links, a solid state switching matrix for interconnecting said calling and called stations over intercom links, a register for storing dialled digits representing a station being called, a system control circuit memory with a location for each station of said system and means for storing in said memory the status of said station and the address of a link associated with such station during an in-use condition of said station, means for scanning stations of said system, said sequence controller responsive to a station being found off-hook by said scanning means for initiating a sequence to examine the memory location associated with said off-hook station to determine its prior status and, in response to a determination that



said prior status was idle, for advancing said sequence through a plurality of steps to complete a call initiated by said station.

4,215,249

METHOD AND DEVICE FOR CONTROLLING WRINKLES IN A VIBRATILE DIAPHRAGM

John M. Reynard, Framingham; Thomas N. Carignan, Danvers; Richard Paglia, Carlisle, and Joseph F. Rich, Danvers, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 25, 1978, Ser. No. 900,016
Int. Cl.[2] H04R *7/14, 19/00*
U.S. Cl. 179—111 R **17 Claims**

1. A method for mounting a diaphragm in an electroacoustical transducer assembly of the type having a housing member with an opening in at least one side thereof and a pliant, relatively inelastic, vibratile, electrostatic diaphragm material, comprising the steps of:

placing vibratile electrostatic diaphragm material adjacent said housing member such that said diaphragm material extends across said housing opening;

applying uniform, radially outward forces to said diaphragm material for the purpose of temporarily maintaining at least the inner region of said diaphragm in a generally wrinkle free, planar orientation;

applying a force to a portion of the inner region of said diaphragm material, in excess of said radial forces, for the purpose of offsetting said inner diaphragm region from its said planar orientation to thereby increase the total amount of said diaphragm material extending across said housing opening over that extending across said housing opening before the application of said inner region offsetting force, said offsetting force overcoming said radial forces thereby enabling additional amounts of said diaphragm material to move uniformly inward as said inner diaphragm region is being so offset;

securing an outer region of said diaphragm in a fixed position with respect to said housing member while said inner diaphragm region is in its said offset condition; and

removing said inner diaphragm region offsetting force from said diaphragm material, said diaphragm material forming

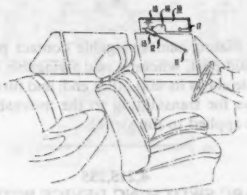
wrinkles throughout its said inner diaphragm region as said inner diaphragm region offsetting force is removed due to the said increased amount of diaphragm material extending across said housing opening after said inner diaphragm region has been so offset and said outer region of said diaphragm has been so secured.

4,215,250

MICROPHONE SUPPORT WITH SIMULTANEOUS ADJUSTMENT OF PLURAL DEGREES OF FREEDOM

Baird E. Resener, Warren, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Oct. 18, 1978, Ser. No. 952,277
Int. Cl.² H04R *1/00*
U.S. Cl. 179—149 **9 Claims**



1.

A microphone support comprising an elongated member (12) having a microphone (11) mounted on one end thereof, said member being flexible in a first direction perpendicular to the longitudinal axis of said member and essentially rigid in the opposite colinear direction and in both directions perpendicular to the first direction in a plane perpendicular to said axis, the improvement in said support comprising

said member being formed from an unarticulated strip of material configured to produce the aforementioned flexibility characteristic,

means for removably housing (10) said member with said one end being positioned for first removal,

means for guiding (13) said member during removal from a home position in said housing, and

means, responsive to at least partial removal of said member from said housing, for resiliently urging (37) said member back into its home position in said housing.

4,215,251

SWITCHING APPARATUS SELECTIVELY UTILIZING A REGENERATIVE REPEATER

Takeo Fukuda; Kazuhiko Hanawa, both of Yokohama, and Kiyoshi Urui, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation-in-part of Ser. No. 768,428, Feb. 14, 1977, abandoned. This application Aug. 18, 1978, Ser. No. 934,850
Claims priority, application Japan, Feb. 16, 1976, 51/14958
Int. Cl.² H04B *3/36*
U.S. Cl. 179—170 R **5 Claims**

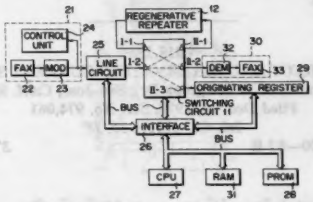
1. A switching apparatus comprising:

a switching circuit provided with a plurality of input terminals and a plurality of output terminals;

at least one regenerative repeater connected between selected input and output terminals of the switching circuit, the number of the regenerative repeaters provided in the switching apparatus being less than the number of circuits signal paths through which a data signal of high error rate is expected to pass;

a first signal-conducting means for conducting a call signal supplied from a calling terminal device through said switching circuit to an originating register which interprets a terminal device-designating signal included in said call signal so as to determine a number allotted to a called terminal device;

random access memory means coupled to said switching circuit and to said originating register for storing a signal denoting a decision with respect to the error rate of a data signal transmitted through each of the signal paths connected between said calling and called terminal devices through said switching circuit, said random access memory means being addressed according to the particular signal path being utilized;



CPU means coupled to said switching circuit, to said originating register, and to said random access memory means for determining if a regenerative repeater is to be used according to the contents of said random access memory and for issuing a prescribed switching instruction to said switching circuit according to the result of the determination; and

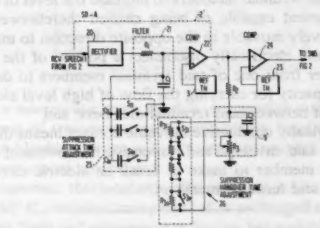
a second signal-conducting means for conducting a data signal between said calling and called terminal devices through said switching circuit and through said regenerative repeater selectively connected in said second signal-conducting means.

4,215,252

VIDEO TELECONFERENCE AUDIO ECHO CONTROL UNIT

Michael Onufry, Jr., Brookeville, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Sep. 27, 1978, Ser. No. 946,298
Int. Cl.² H04B *3/20*; H04M *9/08*
U.S. Cl. 179—170.2 **8 Claims**



1. In a video teleconference system of the type including a four-wire transmission circuit having a receive line and a transmit line connected to a loud-speaker and microphone, respectively, an echo suppression apparatus comprising:

(a) first threshold means for generating a first threshold level signal;

(b) means for detecting the level of speech signal activity on said receive line and comparing it to said threshold level signal and, when said detected level exceeds said threshold level, for providing an output signal after a first delay period $Supp_{Atk}$ determined by the distance between the loudspeaker and microphone, said delay period given by:

$0.005 \text{ sec} < \text{Supp}_{Alk} \leq 0.005 + d/c \text{ sec}$

where

d = the minimum microphone to audio speaker distance in feet; and

c = the velocity of sound propagation in air in feet/second;

(c) a normally closed suppression switch in said transmit line openable by a control signal; and

(d) means responsive to said detection means output for supplying said control signal to said suppression switch and for maintaining said control signal for a second delay period t after termination of said detection means output signal.

4,215,253

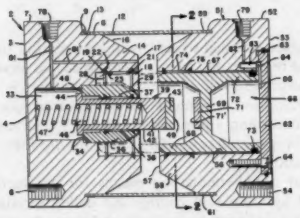
HIGH DIRECT AND ALTERNATING CURRENT SWITCH

Ted N. Tilman, 3538 Telegraph Dr., San Jose, Calif. 95132

Filed Dec. 28, 1978, Ser. No. 974,061

Int. Cl.² H01H *35/38*

U.S. Cl. 200—82 R **37 Claims**



1. An electric switch structure designed to make, break and carry high levels of electrical current in the order of at least 25,000 amperes, comprising:

(a) a pair of axially aligned and spaced electrically conductive cylindrical terminal members each having at least one set of contact bars thereon;

(b) a cylindrical sleeve disposed between said terminal members to retain them in spaced electrical isolation and therewith forming an enclosed envelope;

(c) an electrically conductive bridge member slidably disposed within the envelope and selectively movable in one direction to directly mechanically and electrically connect the terminal members to increase the level of electrical current capable of being carried therebetween and selectively movable in the opposite direction to mechanically and electrically disconnect a portion of the bridge member from one of said terminal members to decrease the capacity for carrying the flow of high level electrical current between said terminal members; and

(d) electrically conductive movable contact means disposed within said envelope and responsive to movement of said bridge member to make or break an electric circuit between said terminal members.

4,215,254

PRESSURE SWITCH WITH RESILIENTLY MOUNTED CONTACT

Nobuyoshi Ohki, Tokyo, Japan, assignor to Niles Parts Co., Ltd., Japan

Filed Dec. 6, 1978, Ser. No. 967,022

Claims priority, application Japan, May 4, 1978, 53-60975

Int. Cl.² H01H *35/32*

U.S. Cl. 200—83 C **6 Claims**

1. A pressure switch comprising:

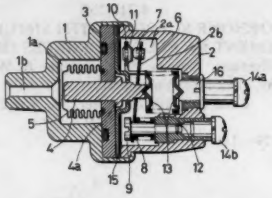
a member movable in response to pressure applied to the switch;

a fixed contact;

a substantially solid contact piece swingable to engage and disengage said fixed contact in response to the movement of the movable member;

a post;

said swingable contact piece having two ends, contact means being mounted adjacent one end and said swingable contact piece being slidably mounted adjacent its other end on said post; and



means for biasing said swingable contact piece toward an end of said post, whereby said swingable contact piece is swingable about its said other end; and further comprising a bellows for transmitting to the moveable member the pressure applied to the switch.

4,215,255

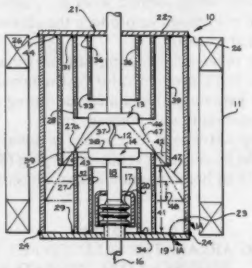
VACUUM ARC SWITCHING DEVICE WITH INTERNAL SHIELDING

Clive W. Kimblin; Joachim V. R. Heberlein; Paul G. Slade, all of Pittsburgh; Roy E. Voshall, New Alexandria, and Francis A. Holmes, Monroeville, all of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jan. 5, 1978, Ser. No. 867,103

Int. Cl.² H01H *33/66*

U.S. Cl. 200—144 B **3 Claims**



1. In a vacuum arc current switching device of a type having means forming a sealed enclosure of insulating material for providing a vacuum environment, a first electrode carried from one end of said enclosure, a second electrode carried from the other end of said enclosure to be disposed in spaced arc current transfer relation therebetween, said enclosure and electrodes being adapted to be disposed within a magnetic field for modulating said arc current between said electrodes, a first plurality of elongate cylinders of insulating material carried by one end of said enclosure in coaxial relation to one of said electrodes, and a second plurality of elongate cylinders of insulating material carried by the other end of said enclosure and disposed coaxially of the other electrode, the cylinders of each of said pluralities extending axially to different degrees relative to the disposition of their associated electrode for shielding a sufficiently extensive portion of said side and end wall surfaces of the interior of said enclosure from vacuum deposition of electrode material to maintain an electrical gap at least substantially as great as the maximum electrode separation to inhibit development of secondary arc terminals on

surfaces within said enclosure in response to vapor deposition thereon of a conductive layer of electrode material.

4,215,256

GAS-INSULATED SWITCHGEAR APPARATUS

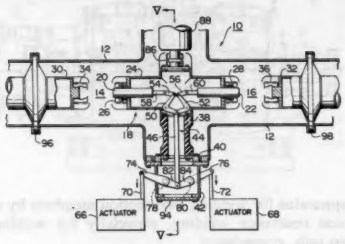
Minoru Sakaguchi; Kazuaki Oishi; Seizo Nakano, and Tuneo Kishi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 692,337, Jun. 3, 1976. This application Apr. 17, 1978, Ser. No. 897,058

Claims priority, application Japan, Jun. 18, 1975, 50-73864

Int. Cl.² H01H *33/88*

U.S. Cl. 200—148 D **5 Claims**



1. Gas-insulated switchgear apparatus comprising:

a. a sheath filled with an insulating gas and kept at ground potential;

b. a device located in said sheath and providing a first disconnect gap and a second disconnect gap, said device comprising a first movable contact and a second movable contact adapted to open and close said first disconnect gap and said second disconnect gap respectively, a hollow conductor slidably housing said first and second movable contacts and electrically connecting said first movable contact to said second movable contact, said hollow conductor being provided with a feeder contact thereon:

c. a feeder conductor located in said sheath and electrically connected to said hollow conductor through said feeder contact;

d. a device insulatingly supporting said hollow conductor with respect to said sheath; and

e. a device for individually actuating said first movable contact and said second movable contact, said device comprising a pair of actuating rods made of an insulating material and operatively connected through respective link mechanisms to said first movable contact and said second movable contact respectively, and a pair of actuators, each actuator operatively connected to a respective one of said pair of actuating rods for individually and independently actuating said first movable contact and said second movable contact through the medium of said pair of actuating rods respectively, said pair of actuating rods disposed adjacent and extending parallel to said insulating support device, said link mechanisms being housed in said hollow conductor, and said actuators being located outside said sheath.

4,215,257

PRECISION TOGGLE SWITCH

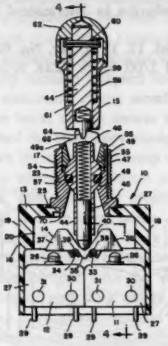
Thomas J. Repplinger, Cary, Ill., assignor to Otto Engineering, Inc., Carpentersville, Ill.

Filed Nov. 20, 1978, Ser. No. 961,954

Int. Cl.² H01H *23/30*

U.S. Cl. 200—153 T **4 Claims**

1. A toggle switch comprising a casing having a pair of spaced-apart walls, a pair of pushbutton switches mounted in the casing between the walls, a pair of parallel pivot pins extending between the walls and mounted therein, an actuator supported by the pivot pins, the actuator being pivotable in one direction about one of the pivot pins for engaging the pushbuttons of one of the switches and being pivotable in the opposite direction about the other pivot pin for engaging the pushbutton of the other switch, and a toggle lever pivotally mounted in the casing and engaging the actuator for pivoting the actuator about the pivot pins.



4,215,258

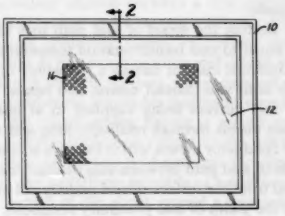
MICROWAVE OVEN WINDOW CONSTRUCTION

Alfred D. Nelson, Stillwater, and Merlin R. Jahnke, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 758,121, Jan. 10, 1977, abandoned. This application Dec. 9, 1977, Ser. No. 859,117

Int. Cl.² H05B *6/64*

U.S. Cl. 219—10.55 D **8 Claims**



5. In a microwave oven window comprising a metal frame and a pair of transparent panels adhesively bonded to a microwave-blocking screen which is coextensive with the panels, the improvement comprising:

a transparent, thermoplastic adhesive which has zero creep at 65° C., remains transparent after prolonged exposure to heat, light and microwave radiation, has a viscosity of less than two million centipoises at 175° C., and substantially completely fills the space between the panels including the openings in the screen so that the window is substantially void-free and hence transparent except to the extent of the masking effect of the screen,

the space between the two transparent panels which is filled by said thermoplastic adhesive is 0.01 to 0.2 mm greater than the thickness of the screen,

the thickness of the interior of the two panels does not exceed 0.25 mm, and

the thinness of the interior panel plus adjacent adhesive constricts the microwave-transmitting path therethrough to minimize microwave leakage.

4,215,259

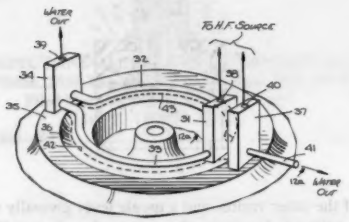
SURFACE HARDENING OF METALS USING ELECTRIC CURRENTS

Wallace C. Rudd, New Canaan, and Humfrey N. Udall, Darien, both of Conn., assignors to Thermatool Corporation, Stamford, Conn.

Filed Jul. 12, 1978, Ser. No. 923,776

Int. Cl.[2] H05B *5/00, 9/00;* B23K *9/04;* C22F *3/02*

U.S. Cl. 219—10.43 26 Claims



1. A method of modifying the properties of an area of the surface of a metal part along a path thereon which is narrow relative to its length and which is narrower than the surface so that there is metal of different properties at at least one lateral side thereof, said part being made of structurally continuous metal which changes its properties with heating to a transformation temperature and subsequent cooling, said method comprising:

contacting said metal part with a first contact means at one end of said path and with a second contact means at the opposite end of said path thereby to define the length of said path;

rapidly heating the metal of said path to a temperature at least equal to said transformation temperature by supplying electrical current having a frequency of at least 3000 Hz to both said contact means, and hence, to said metal part, said current being supplied to at lest one of said contact means through relatively long and narrow proximity conductor means which overlies at least most of the length of said path between said contact means, which is spaced from the surface of said path by not more than two times the width of said proximity conductor means in the direction substantially parallel to the surface of said path and perpendicular to said length of said path, and which is connected to said contact means so that the current therein, at any instant, flows oppositely to the flow of current in said metal part to cause the current to concentrate in a said path as close as possible to said conductor, the duration, frequency and magnitude of said current and said width of said proximity conductor means being selected to heat metal in a said path narrower than said surface to at least to said temperature to which it is to be heated prior to the time that the metal adjacent at said side of said path reaches a temperature which will prevent self-quenching of the metal of said path when the current is discontinued; and

discontinuing the supply of said current to said path when at least said transformation temperature is reached and before said temperature which will prevent self-quenching is reached whereby the metal of said path is rapidly cooled and an area conforming to the surface of said path and at the surface of said metal part having surface properties different from metal adjacent thereto is formed.

4,215,260

APPARATUS FOR WELDING TWO PROFILE OR SECTION RODS BY MEANS OF RESISTANCE WELDING, ESPECIALLY FOR WELDING TWO RAILS

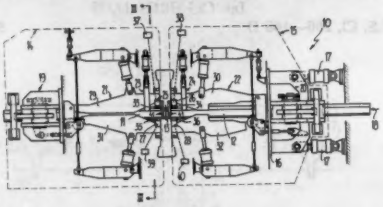
Hans-Rudolf Zollinger, Geroldswil, Switzerland, assignor to H. A. Schlatter AG, Schlieren, Switzerland

Filed Aug. 28, 1978, Ser. No. 937,559

Claims priority, application Switzerland, Sep. 9, 1977, 11042/77

Int. Cl.[2] B23K *11/02*

U.S. Cl. 219—53 10 Claims



1. An apparatus for welding two section members by means of electrical resistance welding, especially for welding together two rails, comprising:

a respective clamping device provided for each section member;

each of said clamping devices having contact electrode means for the infeed of a welding current;

means for relatively displacing the clamping devices with respect to one another in the direction of the section members in order to exert a pressure force at a welding joint between the section members to be welded together;

a centering device arranged between the clamping devices and capable of being brought into engagement with both adjoining ends of the section members to be welded together, in order to retain in mutual alignment during the welding operation and a subsequent cooling time the profiles of both ends of the section members which directly neighbour the welding joint;

said centering device comprising two pivotal arms;

means mounting said pivotal arms for pivotal movement about an axis essentially parallel to the lengthwise direction of the section members;

each of the pivotal arms being operatively associated with one end of a related one of the section members;

each of the pivotal arms having a free end possessing a centering mouth.

4,215,261

EDM APPARATUS FOR CUTTING A GROOVE IN A RECESS IN A WORKPIECE

Jean-Paul Briffod, Monnetier-Mornex, France, assignor to Ateliers des Charmilles S.A., Geneva, Switzerland

Filed Apr. 28, 1978, Ser. No. 900,976

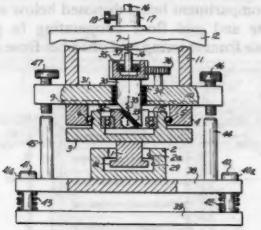
Claims priority, application Switzerland, May 6, 1977, 5680/77

Int. Cl.[2] B23P *1/12*

U.S. Cl. 219—69 V 7 Claims

1. In an apparatus for machining by electrical discharges an electrode workpiece by means of an electrode tool wherein said apparatus has a stationary table and said electrodes are displaced one relative to the other in translation in a plane perpendicular to a longitudinal axis of penetration of the electrode tool into the electrode workpiece, said apparatus comprising a reciprocable member displaced along said axis by means of a servo-motor such as to maintain predetermined machining conditions in a machining zone between said electrodes, a first movable platen supporting one of said electrodes mounted on said reciprocable member, means for displacing said first movable platen along two axes perpendicular to said

first axis, and means for controlling the amplitude of displacement of said first movable platen as a function of said displacement of said reciprocable member, the improvement comprising a second movable platen supporting the other of said electrodes, means for displacing by way of said reciprocable member said second movable platen along said first axis, biasing



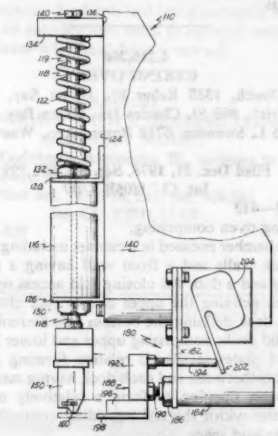
means disposed between said second movable platen and said apparatus table, said biasing means providing a force which opposes the displacement of said second movable platen along said first axis, and at least one adjustable abutment for driving said second movable platen by means of said reciprocable member in the direction of said axis from an initial axial position of said reciprocable member and second movable platen.

4,215,262

AUTOMATIC PERCUSSION WELDING APPARATUS WITH STUD FEED

Carl H. Brastow, Foxboro, Mass., assignor to Conceptual Engineering, Foxboro, Mass.

Filed Mar. 6, 1978, Ser. No. 883,816
Int. Cl.[2] B23K *9/22*; B23B *31/00*
U.S. Cl. 219—95 **27 Claims**



1. Apparatus for welding an element to a work piece comprising a support, a ram member mounted on the support and adapted for rectilinear motion between a first position away from a work piece station and a second position adjacent the work piece station, pneumatic means for causing the ram to move from its first to its second position and return spring means urging the ram toward its first position, the ram is vertically disposed and has two opposite ends and a bore extends therebetween, chuck means, for clampingly engaging the element, mounted on a portion of the ram closest to the work piece station, the chuck comprising a stationary clamp member having a clamping surface in alignment with the bore in the ram, a movable clamp member adapted for movement toward and away from the stationary clamp member effectively closing and opening the bore, spring means urging the movable clamp member toward the stationary clamp member and actuating means to move the movable clamp member away from the stationary clamp member to permit an element to be received in the chuck, and means for creating an electric field between the element and the work piece.

19. In a welding apparatus having work piece holding means and means to hold an element to be welded to the work piece and move it into engagement with the work piece to effect welding therebetween an improved chuck to hold the element comprising a housing having opposed side walls, a transversely extending slot formed in the opposed side walls, a stationary clamp member mounted in the housing having a clamping surface, a movable clamp member adapted for movement toward and away from the stationary clamp member, two pins projecting from the movable clamp member and extending through respective slots, spring means urging the movable clamp member toward the stationary clamp member, and actuator means to move the movable clamp member away from the stationary clamp member to permit an element to be received between the stationary and movable clamp members, the actuator means to move the movable clamp includes an actuator comprising a pair of pusher blocks adapted for movement into engagement with respective pins forcing them and concomitantly the movable clamp member to move against the bias of the spring means away from the stationary clamp member.

26. Apparatus for welding an element to a work piece comprising a support, a ram member mounted on the support and adapted for rectilinear motion between a first position away from a work piece station and a second position adjacent the work piece station, pneumatic means for causing the ram to move from its first to its second position and return means for returning the ram to its first position, chuck means for clampingly engaging an element, means for feeding an element to the chuck means, the chuck means having a mouth and being mounted on a portion of the ram closest to the work station, means for creating an electric field between the element and the work piece, and a platform movable to a position in alignment with the mouth of the chuck spaced a selected distance therefrom, said platform serving as a stop for elements fed to said chuck means.

4,215,263

DRAWING OPTICAL WAVEGUIDES BY HEATING WITH LASER RADIATION

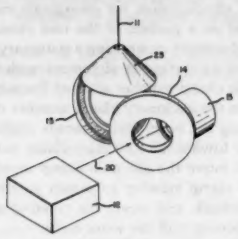
David S. Grey, Lexington, Mass., and Robert A. Wey, Horseheads, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jun. 8, 1978, Ser. No. 913,900
Int. Cl.[2] B23K *9/00*
U.S. Cl. 219—121 L **10 Claims**

1. Apparatus for heating a blank to the drawing temperature of the materials thereof comprising:

a source of laser radiation;

means for splitting said radiation into beams which do not intersect the axis of said blank;



means for forming said laser radiation into beams having a prescribed radial power density distribution in relation to said blank; and

means for drawing said blank along the axis thereof.

4,215,264

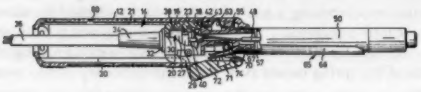
TELESCOPING HAIR CURLER

Michael W. Hetherington, Markham, Canada, assignor to Appliance Design Probe Inc., Scarborough, Canada

Filed Aug. 21, 1978, Ser. No. 934,709

Int. Cl.[2] A45D *2/24, 1/04;* **H05B** *3/06;* **H01R** *11/02*

U.S. Cl. 219—225 **5 Claims**



1. A hand-held hair curler comprising:

an elongated housing defining an internal elongated slide chamber with a barrel opening in one end and a wire opening in the other end,

an electrical swivel coupling including a non-rotary portion adapted to reciprocate in said slide chamber but being restrained against rotation with respect to said housing, and a swivelling portion adapted to rotate with respect to said non-rotary portion, but being restrained against longitudinal movement with respect to said non-rotary portion, said swivelling portion including an electrical wire, whereby the wire can swivel with respect to the housing and can reciprocate along said housing as said non-rotary portion reciprocates, the wire extending out through said wire opening and being slidable therein,

and hair-heating means connected to said non-rotary portion and projecting therefrom remote from said wire, the hair-heating means including a barrel which can project through said barrel opening.

4,215,265

METHOD AND APPARATUS FOR PRODUCING CERAMIC WARE

Philip D. White, 286 Pleasant St., Marblehead, Mass. 01945

Continuation-in-part of Ser. No. 740,800, Nov. 11, 1976, abandoned. This application Dec. 14, 1977, Ser. No. 860,476

Int. Cl.[2] H05B *3/66*

U.S. Cl. 219—390 **6 Claims**

1. A reducing kiln for producing ceramic ware, said kiln comprising:

(a) a housing having

an interior, at least substantially sealable, chamber for receiving ceramic wire;

an opening in said chamber for introducing ceramic ware into said chamber;

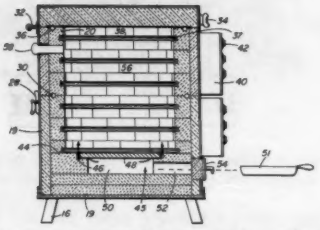
a cover for said opening;

an inner refractory lining;

a floor formed with a second opening; and

a plate member mounted on said floor and covering said opening;

(b) a compartment accessible from an exterior wall of said housing through a closeable access opening and communicating with said sealable chamber, said compartment configured to receive a reducing agent, at least a portion of said compartment being disposed below said plate, and said plate and said floor cooperating to prevent solid particulate from entering said chamber from said compartment;



(c) said plate member and said floor further cooperating to allow gas to seep from said compartment to said chamber for providing a substantially uniform gaseous environment in said chamber;

(d) electrical heating wire elements mounted to said housing within said chamber, said heating wire elements being subject to damage in a reduction atmosphere, and exposed to a central portion of said chamber, said electrical heating elements having an energized and a deenergized state, said chamber being heated when said electrical heating elements are energized;

(e) control means for controlling the state of said electrical heating elements; and

(f) means operatively connected to said heating elements and said control means for supplying power to said heating elements.

4,215,266

BAKING OVEN

Gilbert L. Smith, 1355 Reber St., Green Bay, Wis. 54308; Gilbert Trick, 888 St. Charles Dr., Green Bay, Wis. 54301, and David L. Swanson, 6718 Revere Ave., Wauwatosa, Wis. 53213

Filed Dec. 21, 1978, Ser. No. 971,799

Int. Cl.[2] H05B *3/00*

U.S. Cl. 219—413 **3 Claims**

1. A baking oven comprising:

a baking chamber encased in a cabinet including top, bottom and back walls and a front wall having a front access opening and a door for closing said access opening,

a top deck defining the upper side of said chamber and a bottom deck defining the bottom side thereof,

each of said decks comprising upper and lower horizontally disposed plates in spaced relation forming an enclosed space therebetween and each deck having means adjacent said access opening to form a relatively narrow vent across the width thereof providing controlled air flow access to said space,

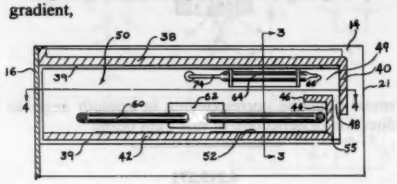
an electrical heating element located between said plates of each of said decks and extending across the extent thereof so as to provide substantially uniform heating thereacross,

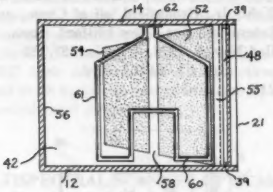
a temperature sensing means located within said space of each deck near to a said wall thereof with its sensing tip

being located substantially at said vent and a thermostat including a switch associated with each of said decks operatively connected to said sensing means and to said heating element,

the bottom plate of said top deck being partially blackened on its upper surface in a configuration so as to provide an unblackened portion extending generally in the form of an arc increasing in area from front to back of said chamber,

the heating element of said top deck being operative to uniformly heat the upper portion of said baking chamber through said blackened plate to a browning temperature gradient,





the heating element of said bottom deck being operative to heat the lower portion of said baking chamber to a lesser predetermined baking temperature gradient,

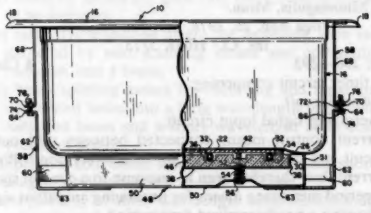
said sensing tips of said top and bottom deck sensing means being operative to sense both the deck temperature in which it is contained and the ambient air temperature entering said decks through said vents and said sensing means of each of said decks being operative to actuate said thermostat switch means associated therewith to maintain said temperature gradients and being promptly responsive to cooler air entering said vents to maintain said temperature gradients when said door is opened.

4,215,267

FOOD WARMER WITH A HEATING ELEMENT ASSEMBLY MOUNT

Johannes W. Kaebitzsch, Algonquin, Ill., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Jul. 19, 1978, Ser. No. 926,081
Int. Cl.² F27D *11/08*
U.S. Cl. 219—439 **11 Claims**



1. A built-in well type food warmer comprising:

an upwardly opening food well having a heat conductive bottom wall;

a heating assembly including a thermal insulation means, a heating element supported by said thermal insulation means, a mounting member, resilient mounting means, and a thermally conductive member which is resiliently mounted by the resilient mounting means to the mounting member and which is sufficient to receive heat from said heating element, said thermally conductive member positioned to be brought into heat conducting engagement with the bottom wall of said food well when an upward force is applied to said heating assembly through the resilient mounting means, and

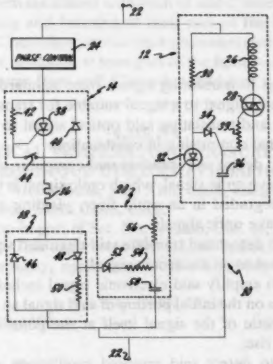
supporting means secured to said food well at points romote from said heating assembly, said supporting means supporting said mounting member in engagement with the heat conductive bottom wall of said food well, said supporting means further imparting an upward force to said thermally conductive member through said resilient mounting means to bring said thermally conductive member into heat conducting relationship with the heat conductive bottom wall of said food well.

4,215,268

CIRCUITS PRIMARILY INTENDED FOR USE IN DESOLDERING TOOLS

Ernst J. Dinkel, Cerritos, Calif., assignor to Eldon Industries, Inc., Hawthorne, Calif.

Filed Mar. 31, 1978, Ser. No. 892,428
Int. Cl.² H03R *17/00*; H01B *1/02*
U.S. Cl. 219—507 **7 Claims**



1. In a load operation circuit having a load connected in series with a switch means for controlling current flow through said load across AC current terminals the improvement which comprises:

said switch means comprising a bidirectional solid state switch responsive to an applied electric signal to pass a current,

another solid state switch located in parallel with said load and said bidirectional solid state switch, said other switch being capable of passing a current in one direction in response to an applied signal,

a diode and a capacitor connected in series with one another in a network connected in parallel around said other switch,

a connection between said diode and said capacitor with said bidirectional switch for supplying a signal to said bidirectional switch so as to control the operation of said bidirectional switch,

an operating circuit connected in parallel with said coil operation circuit,

said operating circuit including in series a current control

means for passing either a full wave or a half wave AC current, another load and a detection circuit means for detecting whether a full or a half wave AC current is passing through said load,

coupling circuit means for supplying a signal to said other switch when a full wave AC current is passing in said operating circuit so as to actuate said other switch so that it is capable of passing a current, said coupling circuit means connecting said detection means and said other switch.

4,215,269

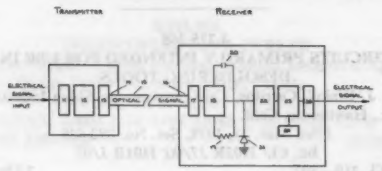
FIBER OPTIC MODEM/DATA SET

Loughrey R. Kuhn, 950 Norwood Rd., Silver Spring, Md. 20904

Filed Jun. 9, 1978, Ser. No. 914,134

Int. Cl.[2] H04B 9/00

U.S. Cl. 455—612 **1 Claim**



1. A data set fo translating signals from standard electronic digital computer signal to a signal suitable for transmission on an optic fiber and translating said optical signal to a standard electronic signal comprising in combination:

(a) means to detect and translate said computer signal into a square wave optic signal, which optic signal is transmitted by and degraded in an optic fiber, yielding a degraded square wave optic signal,

(b) means to detect and translate said degraded square wave optic signal to an electronic signal,

(c) means to amplify said electronic signal including means to impress on the initial portion of said signal an oscillation characteristic of the signal itself at the point said signal ceases to rise,

(d) means to detect said imposed oscillations which are characteristic of the data signal alone,

(e) means to translate said detected signal into the standard electronic signal output.

4,215,270

VARIABLE OPTICAL TRANSMITTER

Kurt Eichweber, Hamburg, Fed. Rep. of Germany, assignor to Precitronic Gesellschaft fur Feinmechanik und Electronic mbH, Fed. Rep. of Germany

Filed Feb. 27, 1978, Ser. No. 881,625

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1977, 2714177

Int. Cl.[2] G01J 1/20

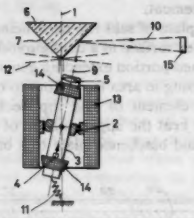
U.S. Cl. 250—201 **11 Claims**

1. A variable optical transmitter, comprising:

means to project a light beam along a vertical axis;

means to deflect said light beam in any desired direction from said vertical axis; and

a transmitting reflector coaxial with said vertical axis and substantially symmetrical about said axis, said reflector adapted to reflect the light beam in a substantially horizontal direction corresponding in azimuth angle to the direction of deflection of said light beam.



4,215,271

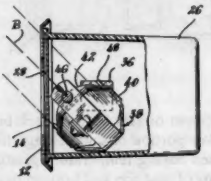
ADJUSTABLE MIRROR MOUNT FOR PHOTOELECTRIC INTRUSION DETECTOR

Philip H. Mudge, New Fairfield; Richard Settanni, Bethel, and William G. Kahl, Jr., Brookfield, all of Conn., assignors to Arrowhead Enterprises, Inc., New Milford, Conn.

Filed Nov. 6, 1978, Ser. No. 957,730

Int. Cl.[2] H01J 3/14

U.S. Cl. 250—216 **7 Claims**



1. In a photoelectric intrusion detector of the type including a housing, a radiation window defined by said housing, a collimating lens in said housing having its focal point on a radiation element within said housing, and an angled mirror mounted within said housing to direct radiation between said lens and said window, the improvement which comprises: a mount supporting both of said mirror and lens for selective translation about an axis of rotation passing through said focal point, the optical axis of said lens describing a conical surface about said axis of rotation while maintaining a fixed distance between the center of the lens and said radiation element during said translation.

4,215,272

TIMER CIRCUIT WITH MULTIPLE TIME DELAY OUTPUTS

Paul A. Corbero, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 25, 1978, Ser. No. 936,940

Int. Cl.[2] H03K 5/13

U.S. Cl. 250—293 **4 Claims**

1. A timer circuit comprising:

an output circuit,

an energizing signal input circuit,

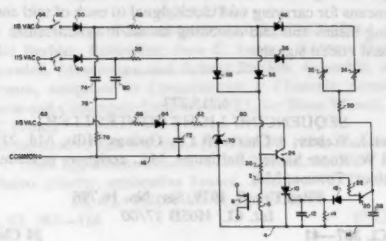
a current control means connected between said output circuit and said input circuit for selectively controlling a current flow therebetween in response to a control signal,

time period measuring means for producing an output signal following a predetermined time period,

control signal means for selectively applying a control signal to said current control means and to said time period

measuring means to initiate a measurement of said time period and

current bypass means connected across said load circuit means and responsive to said output signal for providing a current bypass path in parallel with said load circuit means, said time period measuring means including a plurality of separate time period measuring circuits and



said control signal means including a plurality of separately and selectively actuable control circuits connected to respective ones of said time period measuring circuits wherein said time period measuring means each include an RC circuit for developing said output signal dependent on the RC time constant and a unijunction transistor arranged to be triggered into conduction by said RC circuit to produce said output signal.

4,215,273

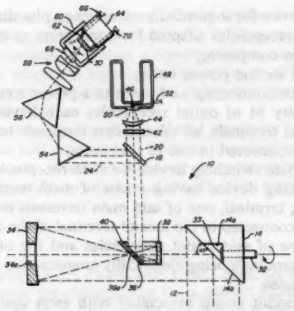
MULTISPECTRAL SCANNER OPTICAL SYSTEM

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Roy C. Stokes, Alvin, and Norman G. Koch, Houston, both of Tex.

Filed Mar. 29, 1979, Ser. No. 25,163

Int. Cl.[2] G01J *1/00*

U.S. Cl. 250—347 **28 Claims**



14. A multispectral scanner optical system comprising:

(a) scanning means for gathering electromagnetic radiation to be detected;

(b) reflective telescope means for receiving such radiation gathered by said scanning means and collimating said radiation into a beam;

(c) beam splitting means for receiving and separating said collimated beam into a long wavelength band collimated radiation beam and a short wavelength band collimated radiation beam;

(d) prism spectrometer means for dispersing said short wavelength band collimated radiation beam;

(e) a plurality of short wavelength band radiation detectors wherein each such detector is operable for sensing radiation of wavelength over a corresponding detection band at least a portion of which band is included within the wavelength limits of the dispersed short wavelength radiation band; and

(f) long wavelength band radiation detector means operable for sensing radiation of wavelength over a band at least a portion of which band is included within the wavelength limits of the long wavelength radiation band.

4,215,274

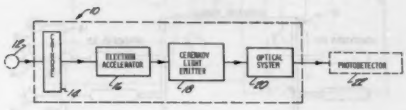
X-RAY DETECTOR WITH PICOSECOND TIME RESOLUTION

Stephen B. Segall, Ann Arbor, Mich., assignor to KMS Fusion, Inc., Ann Arbor, Mich.

Filed Dec. 23, 1977, Ser. No. 863,941

Int. Cl.[2] G01T *1/20*

U.S. Cl. 250—361 R **42 Claims**



1. An x-ray detector comprising, a plurality of cathodes each adapted to emit electrons when irradiated by x-rays, an electron accelerator for accelerating electrons emitted by each of said cathodes to a relativistic velocity, a Cherenkov emitter associated with each of said cathodes and receiving electrons from its associated cathode after the electrons have been accelerated by said electron accelerator and emitting light, and an optical system associated with each of said Cherenkov emitters for collecting and focusing at least part of the light from its associated Cherenkov emitter on a photodetector, and a photodetector for detecting at least part of the light collected by said optical systems from said Cherenkov emitters.

4,215,275

OPTICAL TEMPERATURE MEASUREMENT TECHNIQUE UTILIZING PHOSPHORS

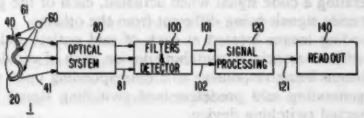
Kenneth A. Wickersheim, Palo Alto, Calif., assignor to Luxtron Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 751,366, Dec. 16, 1976, Pat. No. 4,075,493. This application Feb. 15, 1978, Ser. No. 877,977

Claims priority, application United Kingdom, Dec. 7, 1977, 51006/77

Int. Cl.[2] G01N *21/38*

U.S. Cl. 250—459 **21 Claims**



1. A method of determining the temperature of an object, comprising the steps of:

providing a length of optical fiber,

positioning over one end of the optical fiber a sleeve having a heat conductive end, said heat conductive end having a layer of phosphor on an inside surface thereof, said phosphor being characterized by emitting, when excited, electromagnetic radiation within optically isolatable bandwidths at at last two distinct wavelength ranges and with relative intensities therein that vary as a known function of the phosphor temperature,

placing said probe cover in contact with said object,

exciting said phosphor to cause emission of said at least two wavelength bands,

directing said phosphor emission through said optical fiber

to a detecting station at another end of the optical fiber, and

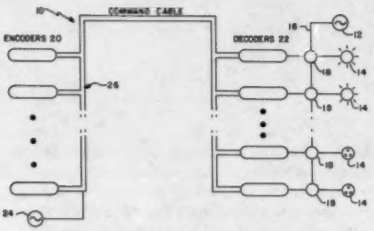
detecting at the detecting station the relative intensities of said at least two distinct wavelength radiation bands, whereby said relative intensity is an indication of the temperature of the phosphor layer and related thereto by said known temperature emission function.

4,215,276

REMOTE CONTROL OF ELECTRICAL POWER DISTRIBUTION SYSTEM AND METHOD

William F. Janeway, 427 Webster St., Palo Alto, Calif. 94301

Filed Mar. 20, 1978, Ser. No. 888,302
Int. Cl.[2] H02J *3/00;* **H04Q** *9/00*
U.S. Cl. 307—40 **22 Claims**



1. In a building structure, an electrical power distribution system for controlling the supply of electrical power to a plurality of outlets located at selected locations in the walls and ceiling of said structure, said system comprising:

(a) a source of AC power of predetermined frequency and amplitude producing a 110 volt AC power signal at 60 Hz;

(b) power conductors extending from said source of electrical power along specific power paths through the walls and ceiling of said structure to said selected locations for providing electrical power to said outlets;

(c) a switching device disposed at each of said locations and responsive to a predetermined switching signal for connecting the power conductor at its location to an associated outlet for applying said electrical power thereto;

(d) a plurality of control stations disposed at selected locations in the walls of said building structure remote from said outlets and away from said power paths, whereby said control stations are free of any of said power conductors;

(e) encoding means located at each of said control stations for generating a code signal when actuated, each of the generated code signals being different from the others;

(f) decoding means located at each of said outlets and connected to an associated switching device, each of said decoding means being responsive to a corresponding code signal for generating said predetermined switching signal to its connected switching device;

(g) means for producing a continuous pulsating clock signal of predetermined frequency and amplitude for synchronizing and coordinating the operation of said encoding means and decoding means, said clock signal producing means being connected to said source and including means for transforming down and rectifying said power signal to produce a rectified, low voltage pulsating clock signal having the same frequency as said power signal or a multiple thereof, said clock signal including successive pulse trains, each of which includes a fixed number of pulses of equal amplitude, said pulse trains being provided for synchronizing said coded signals and being separated by single pulses which are of different amplitude than said fixed pulses and which are adapted to initiate said coded signals; and

(h) a common control cable separate from said power conductors and extending through the walls and ceiling of said structure between said control stations and said outlets so as to define an overall control path different than any of said power paths, said cable including

(i) a command conductor connected between all of said encoding and decoding means for carrying said code signals from each of said encoding means to all of said decoding means, and

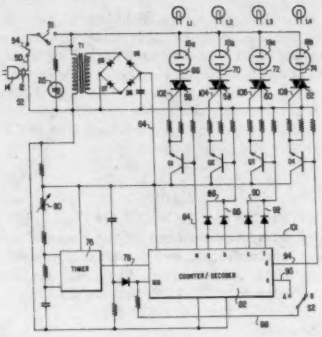
(ii) a clock-signal conductor connected to said clock signal producing means and all of said encoding and decoding means for carrying said clock signal to each of said encoding means and said decoding means in synchronism with said coded signals.

4,215,277

SEQUENCING LIGHT CONTROLLER

Robert I. Weiner, 4 Chartwell Ct., Owings Mills, Md. 21117, and W. Roger Sauter, Baltimore, Md., assignors to Robert I. Weiner, Towson, Md.

Filed Feb. 9, 1979, Ser. No. 10,796
Int. Cl.[2] H05B *37/00*
U.S. Cl. 307—41 **24 Claims**



10. A device for sequentially energizing a plurality of electrical outlet receptacles adapted for connection to conventional light means comprising:

first and second power buses;

means for connecting said buses to a power source;

a plurality M of outlet receptacles each having first and second terminals, all of said first terminals being electrically connected to one of said buses;

a solid state switching device for each receptacle, each said switching device having a pair of main terminals and a gating terminal, one of said main terminals being electrically connected to the second terminal of the corresponding one of said outlet receptacles and the other of said main terminals being electrically connected to the other of said buses;

gating circuit means associated with each said solid state switching device for furnishing a gating signal to said gating terminal in response to an enabling signal to said gating circuit means;

timing circuit means for generating timing pulses at uniformly spaced time intervals;

stepping circuit means having an input terminal receiving said timing pulses, a reset signal input terminal, and a plurality N of output terminals, N being greater than M, said stepping circuit means being operable to energize a single output terminal during the interval between successive timing pulses, beginning with a first output terminal and progressing to successive ones of said output terminals at successive timing pulses, the Nth output terminal being connected to said reset signal input terminal to cause said stepping circuit to revert to said first output terminal following the Nth timing interval; and

connecting circuit means including a manually operable

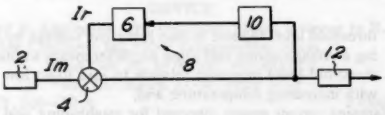
switch and providing signal paths for connecting the first N-1 output terminals of said stepping circuit means to said gating circuit means for furnishing enabling signals thereto, at least certain of said signals paths extending through said manually operable switch whereby different ones of said signal paths are energized in accordance with the setting of said manually operable switch.

4,215,278

DETECTOR FOR ABNORMAL PHENOMENA

Daniel Barbier, Echirolles; Jean C. Lancre, Antony; Bernard Lauwick, Montrouge, and Robert Poujois, Grenoble, all of France, assignors to Commissariat a l'Energie Atomique, Paris and Compagnie Centrale SICLI, Le Blanc Mesnil, both of, France

Continuation of Ser. No. 689,617, May 24, 1976, abandoned. This application Jul. 12, 1978, Ser. No. 924,109
Claims priority, application France, Jun. 2, 1975, 75 17163
Int. Cl.[2] H01H *35/00*; H01L *31/00*
U.S. Cl. 307—116 **17 Claims**



1. A detector for abnormal phenomena, and comprising:
a transducer for converting to an electrical signal a physical quantity which is representative of an abnormal phenomenon;
a comparator having two inputs and an output;
a delay circuit having an input and an output;
means connecting the output of said transducer to one of the inputs of said comparator;
means connecting the output of said comparator to the input of said delay circuit;
an electrical signal generator having an output and a control input;
means connecting the output of said delay circuit to the control input of said generator for causing said output of said generator to deliver a signal which is representative of said electrical signal corresponding to said physical quantity, but provided with a delay introduced by said delay circuit;
means connecting the output of said generator to the other input of said comparator, whereby the electrical signal at the output of said comparator is representative of the time-dependent variations of the electrical signal from said transducer.

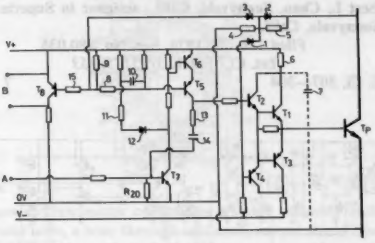
4,215,279

APPARATUS FOR CONTROLLING THE OPERATION OF POWER TRANSISTORS IN A SWITCHING MODE

Philippe W. R. M. G. Lataire, Olympiadelaan 8, 1800 Vilvoorde; Gaston Magetto, Avenue Depage 27, Bte 8, 1050 Brussels, and Jean-Louis Van Eck, Avenue du Saphir, 5, 1420, Braine-l+Alleud, all of Belgium

Filed Mar. 7, 1978, Ser. No. 884,302
Claims priority, application Belgium, Mar. 7, 1977, 0175563
Int. Cl.[2] H03K *17/00*
U.S. Cl. 307—254 **6 Claims**

1. An apparatus for controlling the base current of a power transistor operating in a switching mode, said power transistor being fed through power stage means from a voltage source, the apparatus comprising logic means including:
(a) a first transistor (T_5) having its collector electrode connected to the input of said power stage means;
(b) a second transistor (T_6) having its collector electrode coupled to the emitter electrode of the first transistor;
(c) a third transistor (T_7) having its collector electrode coupled to the base electrode of the second transistor, said third transistor having its base electrode connected to a control signal input terminal;
(d) first circuit means connected between the base electrode of the first transistor and the collector electrode of the third transistor for driving the first transistor into a conductive state during a predetermined time to allow the collector-emitter voltage of the power transistor to reach a level lower than a predetermined threshold;



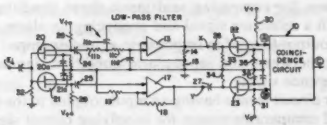
(e) second circuit means comprising resistor means (8) serially connected with at least one diode (2, 3) between the base electrode of the first transistor and the collector electrode of the power transistor to detect the collector-emitter voltage of the power transistor reaching a critical level at turn-on; and
(f) third circuit means comprising an impedance connected between the collector electrodes of the first transistor and the base electrode of the third transistor to establish a minimum conducting time for the third transistor and hence for the power transistor.

4,215,280

PHASE RESPONSIVE FREQUENCY DETECTOR

Joseph Mahig, 701 SW. 91st St., Gainesville, Fla. 32601

Filed Sep. 1, 1978, Ser. No. 939,048
Int. Cl.[2] H03K *1/16*, *3/72*
U.S. Cl. 307—295 **13 Claims**



1. A detector for detecting the presence of selected frequency components of an input signal comprising:
two separate signal paths each delivering an output signal:
an input circuit operative to receive the input signal and to deliver similar signal components into each of said signal paths;
frequency responsive means in at least one of the signal paths, the frequency responsive means having a cross-over point in its frequency characteristic, the frequency responsive means being operative to deliver output such that for input signal components having frequencies on one side of the cross-over point the output of the frequency responsive means in said one path will comprise output frequency components which are substantially in phase with the output signal components of the other path, but for input signal components having frequencies on the other side of the cross-over point the output of the frequency responsive means in said one path will comprise output frequency components which are substantially out of phase with the output signal components of the other path; and
a coincidence circuit having two inputs respectively con-

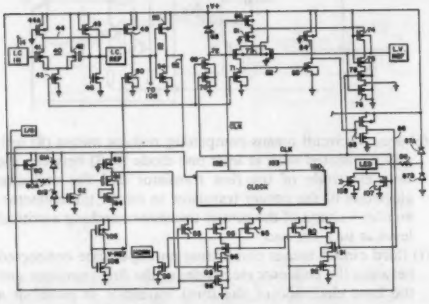
nected to receive the output signal components of said separate paths, the coincidence circuit being operative to compare the instantaneous phases of the output components and to generate output at a first level when said output signals components have coincident phase and to generate output at a second different level when said output signals components have non-coincident phase.

4,215,281

DETECTION CIRCUIT AND STRUCTURE THEREFOR

Robert L. Chao, Sunnyvale, Calif., assignor to Supertex, Inc., Sunnyvale, Calif.

Filed Feb. 22, 1978, Ser. No. 880,035
Int. Cl.[2] H03K *3/353, 5/153*
U.S. Cl. 307—304 **7 Claims**



1. An alarm system operated in response to an alarm condition for providing an output signal representative of such condition including, in combination, on a single integrated circuit chip:

input terminal means for receiving input alarm condition signals;

single comparator means having an input connected directly to said input terminal means and circuit components constructed to provide a high input impedance to said input alarm condition signals presented at said input terminal means for comparing said input alarm condition signals with a reference signal and producing an alarm signal on an output thereof in response to a predetermined relationship between said input alarm condition signals and the reference signal;

driver circuit means having an input coupled to the output of said comparator means for supplying output signals to a load in response to said alarm signal generated by said comparator means when said comparator means receives an input alarm condition signal; and

transistor circuit means having a low input impedance relative to the input impedance of said comparator means for providing a higher gain per unit area of the integrated chip used than said comparator means, said transistor means interconnecting the output of said comparator means with the input of said driver circuit means for controlling the output of said driver circuit means in response to the output of said comparator means.

4,215,282

TEMPERATURE COMPENSATED SENSE AMPLIFIER FOR PROMS AND THE LIKE

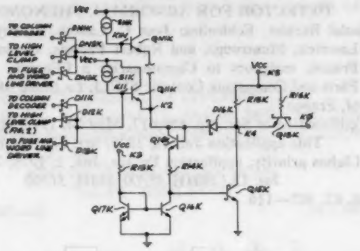
George W. Brown, San Jose, and Thomas L. Reynolds, Sunnyvale, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 3, 1978, Ser. No. 930,512
Int. Cl.[2] H03K *5/153*
U.S. Cl. 307—364 **9 Claims**

1. A sense amplifier for sensing high and low logic levels derived from the blown and unblown conditions of fuses in a programmable read only memory array, comprising:

a transistor switch having two conduction states and being connected to receive high and low logic levels indicative of blown and unblown fuse conditions, respectively, and to switch between said two conduction states;

sense amplifier circuit means disposed for establishing a



threshold level relative to said logic low voltage by creating a voltage across said sense amplifier means so that said threshold level increases relative to said logic low level with increasing temperature; and,

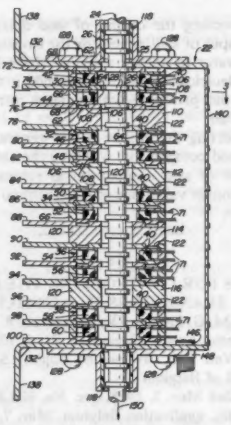
clamping circuit means disposed for establishing said logic high level, said clamping circuit means having a high-level voltage characteristic with respect to said threshold level which increases with increasing temperature.

4,215,283

LINEAR STEPPING MOTOR

Walter E. Hinds, 1358 Schulyer Rd., Beverly Hills, Calif. 90210

Filed May 3, 1978, Ser. No. 902,477
Int. Cl.[2] H02K *37/00*
U.S. Cl. 310—14 **13 Claims**



1. A linear stepping motor comprising a stator defining a central passageway extending longitudinally therethrough, a secondary in the form of an elongated, cylindrical member disposed longitudinally within said passageway, said stator comprising a plurality of coil groups, each group including at least one hollow coil winding disposed between a pair of magnetic stator plates and within a magnetic coil housing, each of said stator plates having an opening therein aligned with the hollow interior of said coil winding, said coil groups being disposed co-axially, with immediately adjacent groups being

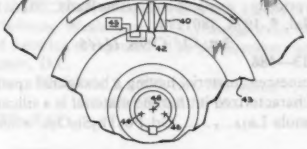
separated by respective hollow non-magnetic spacer members aligned co-axially with said coil groups to form said central passageway, each coil group and an associated spacer forming one pitch of the stator, which pitch is a predetermined value, b, said cylindrical member including a plurality of annular rings of magnetic material disposed at predetermined spaced locations along said member, each annular ring and the portion of the cylindrical member between the ring and the next ring forming one pitch of the secondary, which pitch is a predetermined value, λ, the width of each annular ring being a predetermined value t_w, said coil groups being arranged to be pulsed by electrical energy in a predetermined sequency to effect the stepwise movement of the member along the passageway, with the minimum length of each step which the cylindrical member makes being equal to λ/n, wherein n equals the number of coils groups and wherein the length of the spacer member is equal to $b=2\lambda-t_w$.

4,215,284

POLE-SHOE MAGNET GROUP FOR MAGNETOMOTIVE DEVICE

Richard B. Zentmeyer, Jr., Westfield, Mass., assignor to R. E. Phelon Company, Inc., East Longmeadow, Mass.

Filed Oct. 16, 1978, Ser. No. 951,972
Int. Cl.[2] H02K *11/00*; F02P *3/08*
U.S. Cl. 310—70 A **3 Claims**



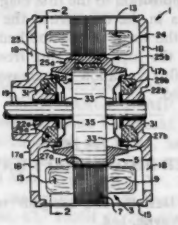
1. Magnetomotive device for use with a breakerless ignition system including a solid state switching element comprising a trigger coil disposed on a core, means electrically connecting said trigger coil to said switching element and a pole-shoe magnet group rotatable relative to said trigger coil, said group including a high strength permanent magnet having the side surfaces thereof of opposite polarity, a pair of pole-shoes abutting said side surfaces of the magnet and extending circumferentially in opposite directions therefrom, the length of each of said pole-shoes in said circumferential directions being at least 8–10 times greater than the corresponding dimension of said permanent magnet and having a surface defined by a radius of curvature eccentric to the center of rotation of said magnet and pole-shoe group so that between said surface of each of said pole-shoes and the core of said trigger coil the air gap decreases from a position at which the outer end of the pole-shoe is opposite the core and another position at which the inner end of the same pole-shoe is opposite said core so that the flux pattern generated by said magnet is spread over substantially the length of said pole-shoes whereby upon relative rotation of the magnet group and trigger coil in one direction a trigger voltage of one polarity is generated in said coil substantially greater in amplitude than the breakdown voltage of said switching element, any other pulses induced in said coil being substantially less than said trigger voltage and said breakdown voltage, relative rotation of said magnet group and trigger coil opposite said one direction generating no voltage pulse of said one polarity having an amplitude equal to said breakdown voltage whereby said breakerless ignition system will not operate on reverse rotation of said device.

4,215,285

SPLASH SHIELD FOR ELECTRIC MOTOR

John G. Lewis, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jul. 31, 1978, Ser. No. 929,516
Int. Cl.[2] H02K *7/08*
U.S. Cl. 310—90 **4 Claims**



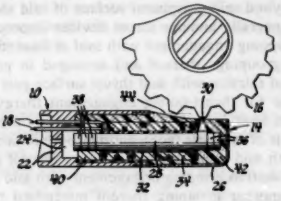
1. In an electric motor comprising a stator assembly including a stator core, a bore through said core, an end shield operatively attached to each end of said stator assembly, a rotor assembly including a rotor shaft and a rotor affixed to and rotatable with said shaft, said rotor being rotatable with the bore of said stator core, bearing means supported by said end shields for journalling said rotor shaft, and a lubricant reservoir adjacent at least one of said bearing means and surrounding said rotor shaft for supplying lubricant to said one bearing means, wherein the improvement comprises: means for inhibiting water splashed into said motor from entering said lubricant reservoir, said splash inhibiting means including a continuous flange carried by said rotor at one end thereof and facing toward said one bearing means, said flange being concentric with said rotor shaft, being disposed on the outside of said lubricant reservoir, and extending endwise from said rotor a distance sufficient to surround and to substantially overlie said lubricant reservoir.

4,215,286

VARIABLE RELUCTANCE ELECTROMAGNETIC PICKUP

Michael W. Ornee, Goleta, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1978, Ser. No. 959,989
Int. Cl.[2] H02K *21/38*
U.S. Cl. 310—155 **2 Claims**



1. A variable reluctance pulse generator for sensing the rotation of a rotary member comprising

a toothed member of magnetic material driven by the said rotary member,

an elongated core member of magnetic material having first and second ends,

a coil around the core member between the ends,

a pole piece of magnetic material extending from the first end of the core member and positioned close to the toothed member and periodically aligned with the teeth thereof during rotation,

a first magnet adjacent the second end of the core member to provide a magnetic flux through the core member, the pole piece and the toothed member, the said flux varying between a high value and a low value as the teeth of the toothed member are aligned and nonaligned, respectively, with the pole piece, whereby an emf is induced in the coil as the flux varies, and

a second magnet adjacent the first end of the core member arranged in opposition to the first magnet for bucking the low value flux in the core when the pole piece is nonaligned with the teeth of the toothed member to effectively reduce the low value flux from the first magnet whereby the flux variation is increased and the induced emf is increased.

4,215,287

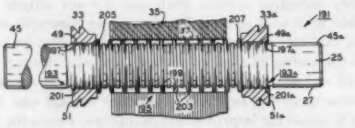
PRIME MOVER ROTOR SHAFT HAVING RAISED RIDGES

Charles W. Otto, DeKalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Mar. 24, 1978, Ser. No. 889,963

Int. Cl.[2] H02K *1/06*

U.S. Cl. 310—217 **34 Claims**



1. A prime mover comprising a stator having a pair of opposite faces, a bore in said stator intersecting with said opposite faces thereof; winding means associated with said stator and adapted for excitation upon energization of the prime mover; a pair of opposite supporting components of the prime mover arranged generally in axial relation with said stator adjacent said opposite faces thereof, respectively, said component pair including a pair of opposed thrust surfaces and a pair of lubrication systems, respectively; a rotatable shaft extending through said stator bore; a pair of opposite end portions on said shaft, said opposite end portions being rotatably supported in said component pair and arranged in lubricated association with said lubrication system pair, respectively; a peripheral surface on said shaft between said opposite end portions thereof; a plurality of generally annular axially spaced apart ridges integrally deformed from said shaft between said opposite end portions thereof with at least some of said ridges of said ridge plurality extending in part generally radially outwardly beyond said peripheral surface of said shaft; a pair of opposite generally annular thrust devices disposed about said shaft in gripping engagement with said at least some ridges of a pair of groupings thereof and arranged in predetermined axial spaced relation with said thrust surface pair of said component pair for thrust-taking engagement therewith; a rotor disposed at least in part within said stator bore and having another pair of opposite faces; another bore in said rotor intersecting with said opposite another faces thereof and disposed about said shaft in gripping engagement with said at least some ridges in another grouping thereof interposed between said first named grouping pair.

4,215,288

STORAGE TARGET FOR SCAN CONVERTER TUBES

Takefumi Kato, Hinode, and Hajime Takita, Hino, both of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

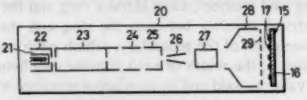
Filed Mar. 27, 1978, Ser. No. 890,495

Claims priority, application Japan, Apr. 14, 1977, 52-47591[U]

Int. Cl.[2] H01J *29/41*

U.S. Cl. 313—394 **1 Claim**

1. A scan converter tube, comprising an evacuated envelope, electron beam generation means, electron beam deflection means and a storage target, said storage target comprising a storage substrate fabricated from a single crystal of aluminum oxide having a purity of more than 99.9% and a collector



electrode on one face of said storage substrate, the collector electrode being in the form of a metal film having a plurality of regularly patterned openings formed therein with a pitch of about 10 to 50 microns, and the electrode density of the storage target being in the range of from about 0.1 to 0.4.

4,215,289

LUMINESCENT MATERIAL, LUMINESCENT SCREEN PROVIDED WITH SUCH A MATERIAL AND LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP PROVIDED WITH SUCH A SCREEN

Johannes T. W. De Hair, and Gert M. Boogerd, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 16, 1979, Ser. No. 12,638

Claims priority, application Netherlands, Mar. 10, 1978, 7802632; Jul. 5, 1978, 7807274

Int. Cl.[2] C09K *11/46*

U.S. Cl. 313—486 **4 Claims**

1. A luminescent material having a hexagonal apatite crystal structure characterized in that the material is a silicate defined by the formula $La_{14-x-y-z}Gd_xPb_yTb_2Si_9O_{39}$, where

$$0.30 \leqq x \leqq 14-y-z$$

$$0.005 \leqq y \leqq 1.5$$

$$0.05 \leqq z \leqq 3.5$$

and wherein Pb and Tb are in the bivalent state and trivalent state, respectively; said luminescent material absent Tb emitting the characteristic line emission of Gd in the range from 310 to 315 nm when excited by ultraviolet radiation having a predominent wavelength of 255 nm.

2. A luminescent material having a monoclinic crystral structure, characterized in that the material is a silicate defined by the formula $Ba_{1-x}Sr_xY_{4-y-z-a-b}Gd_yPr_zSm_aDy_bSi_5O_{17}$, where

$$0 \leqq x \leqq 0.50$$

$$0.1 \leqq y \leqq 4-z-a-b$$

$$0.001 \leqq z \leqq 0.1$$

$$0 \leqq a \leqq 0.1$$

$$0 \leqq b \leqq 0.1$$

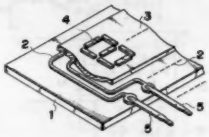
$$0.001 \leqq a+b$$

and wherein Pr, Sm and Dy are in the trivalent state; said luminescent material absent Sm and Dy emitting the characteristic line emission of Gd in the range from 310 to 315 nm when excited by ultraviolet radiation having a predominant wavelength of 254 nm.

4,215,290
THICK-FILM CIRCUIT DEVICE

Chuichi Hikida; Takao Kishino; Tadashi Mizohata, and Tatsuo Yamaura, all of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Chiba, Japan

Filed Nov. 7, 1978, Ser. No. 958,392
Claims priority, application Japan, Nov. 10, 1977, 52-134077; Jun. 16, 1978, 53-72240
Int. Cl.[2] H01J 5/10, 5/52, 63/02
U.S. Cl. 313—496 6 Claims

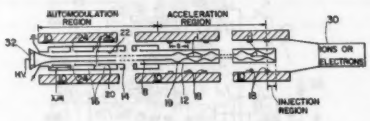


1. A thick-film circuit device comprising a substrate of insulating material such as sheet glass containing alkali components, a first crossover made of non-alkali type glass and formed on said substrate, wiring conductors formed on said first crossover according to a predetermined circuit pattern, and a second crossover made of glass and formed on said first crossover so that it covers said wiring conductors.

4,215,291
COLLECTIVE PARTICLE ACCELERATOR

Moshe Friedman, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 2, 1979, Ser. No. 8,820
Int. Cl.[2] H01J 25/10
U.S. Cl. 315—5.41 10 Claims



1. A method of accelerating charged particles by means of an IREB comprising the steps of:

propagating an annular IREB within a longitudinal drift tube and density modulating said beam to obtain a plurality of longitudinally spaced ring-shaped bunches of electrons;

forming a rippled magnetic field with a desired wavelength within said tube;

passing said modulated beam through said rippled magnetic field to alternately compress and expand said rings of electron bunches in the radial direction;

generating forward and backward electric field waves within said beam; and

injecting charged particles into said beam, said charged particles having a component of velocity in the longitudinal direction for capture and acceleration of said charged particles by said beam.

7. A particle accelerator which comprises:

longitudinal drift tube means having a uniform inner diameter;

means for generating an annular IREB and injecting said annular beam into said longitudinal drift tube;

means for modulating said beam to obtain bunches of longitudinally spaced rings of electrons;

means for forming a longitudinal, rippled magnetic field in axial alignment with said means for modulating said beam and coaxial with said drift tube;

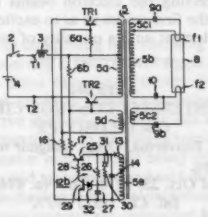
means for generating forward and backward electric field waves within said beam; and

means for injecting charged particles into said beam, said charged particles having a component of velocity in the longitudinal direction for capture and acceleration of said charged particles by said beam.

4,215,292
APPARATUS FOR OPERATING A GASEOUS DISCHARGE LAMP

Kenichi Inui, Yokohama; Hisao Kobayashi, Fujisawa, and Nanjou Aoike, Yokohama, all of Japan, assignors to Toshiba Electric Equipment Corporation, Tokyo, Japan

Filed Mar. 7, 1979, Ser. No. 18,262
Claims priority, application Japan, Apr. 26, 1978, 53/48705
Int. Cl.[2] H05B 41/29, 41/42
U.S. Cl. 315—98 11 Claims



1. An apparatus for operating a gaseous discharge lamp which comprises a D.C. power source; a transistor inverter which is provided with input terminals connected to the D.C. power source through a switch, an output transformer and at least one inverter transistor, the collector-emitter circuit of said inverter transistor being connected between one end of the primary winding of the output transformer and one of the input terminals of said transistor inverter; a discharge lamp energized by an output from the output transformer and provided with a pair of electrodes heated by part of said output; and base current control means which is coupled to the transistor inverter and holds the base current of the inverter transistor at a level lower than a first level capable of starting the discharge lamp by an output from the transformer for a specified length of time after the switch is closed, and, after lapse of said specified length of time, holds the base current of the inverter transistor at said first level.

4,215,293
CADENCE SCANNED FLAT IMAGE DISPLAY DEVICE

Thomas O. Stanley, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 1, 1977, Ser. No. 783,655
Int. Cl.[2] H01J 29/70, 29/72
U.S. Cl. 315—366 8 Claims

1. An image display device comprising

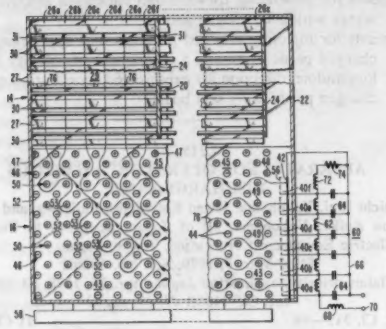
an evacuated envelope having a front and a back wall;

a screen comprising a plurality of cathodoluminescent elements on the inner surface of the front wall;

a set of first electron beam guides between the back wall and the screen for guiding an electron beam in a given path, each first guide including means for deflecting the electron beam toward the screen to excite a cathodoluminescent element;

a set of second electron beam guides at the end of the first set of beam guides and angularily disposed with respect to said first set of beam guides for guiding an electron beam in a given path;

a source of electrons for injecting a plurality of electron beams into the second set of guides; and



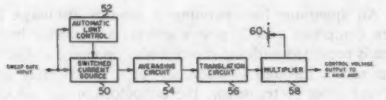
means for directing the electron beams from the second guides into the first guides so as to excite each cathodoluminescent element with a plurality of beams.

4,215,294

AUTOMATIC INTENSITY CONTROL CIRCUIT FOR AN OSCILLOSCOPE

John E. Taggart, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 23, 1978, Ser. No. 954,065
Int. Cl.[2] H01J *29/52*
U.S. Cl. 315—383 **8 Claims**



1. An automatic intensity control circuit for an oscilloscope, comprising:

means for receiving at least one periodic signal and producing an electrical average value which is proportional to the duty cycle of said periodic signal;

means responsive to said average value for producing a control signal which is proportional to the reciprocal of said duty cycle of said periodic signal; and

means for coupling said control signal to a cathode ray tube to control the beam current thereof.

4,215,295

DEFLECTION CIRCUIT FOR A PICTURE TUBE

Fumio Inoue, Yokohama, and Nobuyuki Suzuki, Kamakura, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

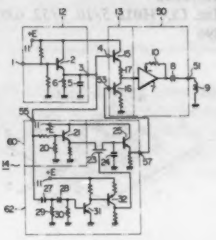
Filed Sep. 6, 1978, Ser. No. 940,008
Claims priority, application Japan, Sep. 9, 1977, 52-107792
Int. Cl.[2] H01J *29/70, 29/76*
U.S. Cl. 315—408 **8 Claims**

1. In a deflection circuit comprising a deflection coil, a sawtooth wave voltage source for generating a sawtooth wave voltage a D.C. level of which varies in accordance with a deflection frequency thereof, and transmitting means for transmitting said sawtooth wave voltage therethrough and outputting a sawtooth wave current representative of the thus transmitted sawtooth wave voltage, which sawtooth wave current is to be supplied to said deflection coil, the improvement which comprises:

shift means provided in said transmitting means for shifting the D.C. level of the sawtooth wave voltage transmitted through said transmitting means in accordance with a control signal applied to said shift means,

sampling means for extracting from said deflection circuit a sampled signal having a varying component which varies in accordance with the change of the D.C. level of said sawtooth wave voltage, and

control means connected between said sampling means and said shift means for detecting the varying component of said sampled signal to produce the control signal represen-



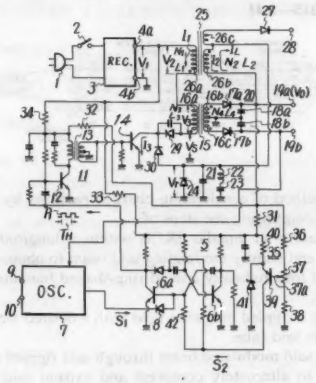
tative of the detected varying component, said control signal being of a sufficient magnitude to cause the shift of the D.C. level of said transmitted sawtooth wave voltage due to said control signal to cancel the change of a D.C. level of said sawtooth wave current due to the change of the D.C. level of said sawtooth wave voltage.

4,215,296

TELEVISION DEFLECTION CIRCUIT

Ichiro Mitamura, Tokyo, and Masayuki Yasumura, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 29, 1978, Ser. No. 964,720
Claims priority, application Japan, Dec. 19, 1977, 52-152609
Int. Cl.[2] H01J *29/70*
U.S. Cl. 315—408 **3 Claims**



1. A television horizontal deflection circuit comprising:

means for delivering an input voltage;

means for switching between alternately conductive and non-conductive states;

a switching regulator transformer having a switching regulator primary winding connected in series between said input voltage delivering means and said switching means and having a switching regulator secondary winding;

means for receiving power from said switching regulator secondary winding and for supplying a regulated D.C. voltage;

a resonant circuit receiving power from said means for supplying a regulated D.C. voltage and connected to a reference potential through said means for switching, said

resonant circuit including a damper diode, a resonant capacitor, a deflection coil and a series-connected capacitor; and

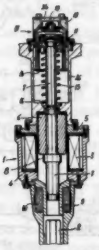
a flyback transformer including a flyback primary winding connected in series with said switching regulator primary winding between said input voltage delivery means and said switching means, and a flyback secondary winding for deriving a high voltage for use in the high voltage anode of a television picture tube, said flyback transformer, said switching regulator transformer being substantially magnetically independent of each other.

4,215,297

ELECTROMAGNETIC PERCUSSION APPLIANCE

Georges Jacquemet, 9, Chemin du Vallon, Caluire (Rhone), France

Filed Jun. 28, 1977, Ser. No. 810,757
Claims priority, application France, Jun. 28, 1976, 76 20184
Int. Cl.[2] H02K *33/00*
U.S. Cl. 318—130 **8 Claims**



1. In a percussion instrument provided with a reciprocable ram coupled with an armature of an electromagnetic coil and a circuit arrangement for intermittently energizing said coil from a current supply to displace said ram unidirectionally against the force of a restoring spring,

the improvement wherein said circuit arrangement comprises:

capacitive means for storing electrical energy, said capacitive means being provided with a charging circuit including said current supply and a discharging circuit including said coil;

a first thyristor in said charging circuit provided with a first gate;

a second thyristor in said discharging circuit provided with a second gate;

a source of control pulses; and

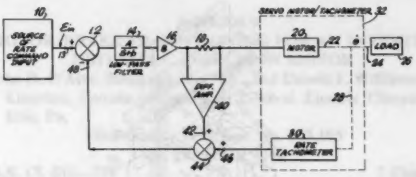
circuitry connected between said source and said thyristors for converting each of said control pulses into first and second firing pulses respectively fed at different instants to said first and second gates for charging and discharging said capacitive means, said circuitry including a first coupling circuit connected to said first gate, a second coupling circuit connected to said second gate and delay means in one of said coupling circuits for relatively staggering said first and second firing pulses by a time interval independent of the recurrence rate of said control pulses.

4,215,298

SERVOMECHANISM RATE CONTROL SYSTEM WITH COMPENSATION FOR MOTOR-TACHOMETER RESONANCE

Bigley William J., Scotch Plains, and Vincent J. Rizzo, Basking Ridge, both of N.J., assignors to Lockheed Electronics Co., Inc., Plainfield, N.J.

Continuation-in-part of Ser. No. 866,394, Jan. 6, 1978. This application Jun. 16, 1978, Ser. No. 916,299
Int. Cl.[2] H02P *5/00*
U.S. Cl. 318—327 **3 Claims**



1. A servo system comprising first summing means comprising a first input receiving a rate control signal, a second input, and an output; a drive motor operatively connected to the output of said first summing means; a tachometer operatively coupled to the drive shaft of said motor and effective to produce a signal corresponding to the rate of rotation of said drive shaft; said tachometer output signal being continuous for all motor conditions; said tachometer and said motor each including winding means having inductive electromagnetic coupling therebetween; means operatively connected between the output of said first summing means and said motor for sensing the current drawn by said motor and for producing a motor drive signal proportional to the motor current, said motor drive signal being continuous for all motor conditions and changing in a direction inverse to the change in said tachometer output signal at resonance for said electromagnetic coupling between said winding means for said motor and said tachometer; and second summing means having a first input operatively connected to said current-sensing means, a second input operatively connected to said tachometer, and an output operatively connected to said second input of said first summing means, said second summing means including means for summing said continuous tachometer and motor drive signals to thereby provide a motor speed signal at said output of said second summing means which is compensated for said electromagnetic resonance.

4,215,299

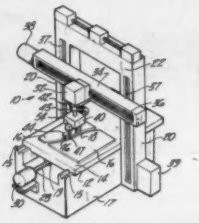
ADAPTIVE PATH FOLLOWING MOTION CONTROL SYSTEM FOR WELDING HEAD ASSEMBLY

Allan I. Edwin, and Harold W. Katz, both of Ann Arbor, Mich., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 452,914, Mar. 20, 1974, abandoned. This application May 2, 1975, Ser. No. 573,898
Int. Cl.[2] B23K *9/12*; G05B *19/22*
U.S. Cl. 318—574 **10 Claims**

1. A position control system for the head of a machine supported for motion along a pair of perpendicular axes and for rotation about an axis normal to said perpendicular axes, operative to move a workpiece and the head relative to one another along a path on the workpiece, comprising: first motor means for moving the workpiece and the head relative to one another along one of said perpendicular axes; second motor means for moving the workpiece and the head relative to one another along the second of said perpendicular axes; third motor means for rotating the head about the axis normal to said perpendicular axes; a sensor operatively supported on the head; means for moving the sensor in a regular pattern to cause the sensor to traverse the path on the workpiece in advance of the motion of

the head relative to the workpiece; and electronic means for receiving the outputs of the sensor, for generating a plurality of sets of electrical signals representative of desired incremental movements of the operating head relative to the workpiece along the two perpendicular axes, for providing said signals to said first and second motor means, for generating a control signal representative of the required incremental rotation of the head about said axis normal to said perpendicular axes in order to maintain the direction of motion of the head relative to the workpiece tangential to the path at each instantaneous



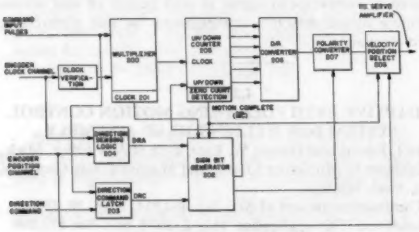
point, and for applying said last control signal to said third motor means, said electronic means including means for generating a set of signals representing the coordinates of the path point traversed by the sensor relative to the position of the head at the time of traverse, memory means for storing a plurality of said coordinate sets, and means for modifying said coordinate sets as the head moves along the path to maintain the coordinates representative of the distances between the instantaneous position of the head and said point traversed by the sensor.

4,215,300

ERROR CORRECTING SERIAL INPUT POSITIONING SYSTEM

Robert H. Schmidt, Minnetonka, Minn., assignor to Data Card Corporation, Minnetonka, Minn.

Filed Aug. 21, 1978, Ser. No. 935,647
Int. Cl.[2] G05B *19/28*
U.S. Cl. 318—603 **4 Claims**



1. A closed loop error correcting serial input positioning system for varying at a controlled incremental rate the position of the shaft of a motor in dependance upon a plurality of serial command pulses, comprising:

an encoder means, mechanically coupled to said motor shaft, for providing a plurality of encoder pulses in response to the angular position of said motor shaft;

a multiplexer means operatively coupled to said encoder means for providing a plurality of output pulses, selected from one of either said input command pulses and said encoder pulses;

an up/down counter means, operatively coupled to said multiplexer means for counting said output pulses of said multiplexer means in dependance upon the angular position of said motor shaft;

a digital to analog converter means, operatively coupled to said up/down counter means, for converting the digital output of said up/down counter means into a representive analog signal;

a servo amplifier, operatively coupled to said digital to analog converter means and said motor for amplifying and conditioning said analog signal and electrically driving said motor with said amplified and conditioned analog signal;

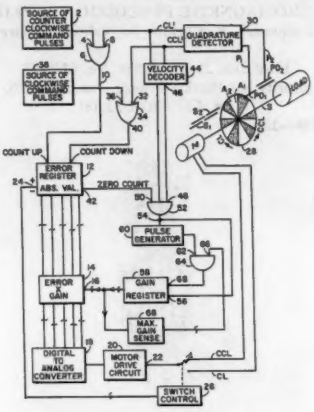
wherein the controlled incremental rate of the varying of the position of the shaft of the motor is directly related to the pulse repetition rate of said serial input command pulses.

4,215,301

DIGITAL SERVO POSITIONING CIRCUIT

Martin K. Mason, West Newbury, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 10, 1978, Ser. No. 949,481
Int. Cl.[2] G05B *19/28*
U.S. Cl. 318—603 **5 Claims**



1. A servo system for moving a member at a given position,

a source of command signals indicative of the amount by which said member is to be moved,

means for providing a position signal indicating the amount by which said member is moved,

means for deriving an error signal indicative of the difference between the amount by which the member is to be moved in accordance with the command signals and the amount by which is has moved as indicated by the position signal,

multiplying means for multiplying the value of the error signal by a given factor,

means responsive to the multiplied error signal for applying a force to said member that is proportional to the value of the multiplied error signal,

means for producing a velocity signal indicative of the velocity of said member,

means for increasing the factor by which the said multiplying means multiplies said error signal when said error signal is other than zero and said velocity signal indicates that the velocity of the member is less than a predetermined amount, and

means for reducing the factor by which the said multiplying means multiplies said error signal to a predetermined operating value in response to the error signal reaching a value representing zero error or the velocity signal having

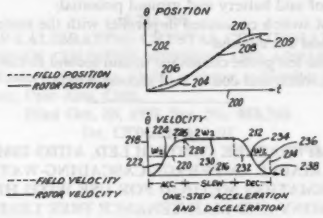
a value indicating that the velocity of said member is greater than a predetermined amount.

4,215,302

CONTROL SYSTEM FOR STEPPING MOTORS, A METHOD OF OPERATING STEPPING MOTORS, AND A METHOD FOR SELECTING CURRENT PATTERNS FOR STEPPING MOTORS

David Chiang, Dix Hills, N.Y., assignor to MCC Associates, Ronkonkoma, N.Y.

Filed Jan. 26, 1978, Ser. No. 872,656
Int. Cl.² H02K *37/00*
U.S. Cl. 318—696 **20 Claims**



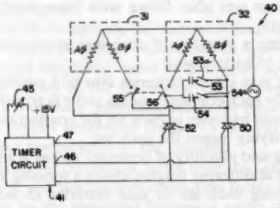
1. A method of establishing current forms for windings of a multi-phase stepping motor, having a rotor and characterized by a plurality of detent positions, to provide a uniform revolving field, said windings being operative in sequentially effective pairs to control the rotor of the motor, said method comprising, for each of said pairs, driving one winding of the pair with maximum running current and measuring rotor stiffness at the resultant detent position, next passing a relatively small current through the other winding of the pair and reducing the current through said one winding to displace said rotor a relatively small fraction of the distance towards the next detent position, adjusting the latter two said currents to obtain a rotor stiffness equal to the first said rotor stiffness while maintaining rotor position, and sequentially displacing the rotor in steps towards the next detent position by passing the currents through the windings of the pair while adjusting the currents to maintain rotor position and stiffness, the magnitudes of the thusly adjusted current defining current curves for the windings to provide a uniform revolving field.

4,215,303

WASHING MACHINE MOTOR CONTROL SYSTEM

Claude M. Brimer, Bryan, Ohio, assignor to Linear International, Rancho La Costa, Calif.

Filed Oct. 7, 1977, Ser. No. 840,160
Int. Cl.² H02P *1/44*
U.S. Cl. 318—752 **11 Claims**



1. A system for adjustably controlling the rate of output shaft rotation reversal of an induction electric motor of the type including upper and lower stators therein with each stator having at least two phase windings thereon, said system comprising:

an astable multivibrator;

a control circuit electrically connected to said astable multivibrator for generating a cyclic control effect therefrom having a variable cycle time length; and

means establishing an electric circuit serially including a pair of gate-controlled semi-conductors alternately responsive to said cyclic control effect between said windings and said astable multivibrator, and

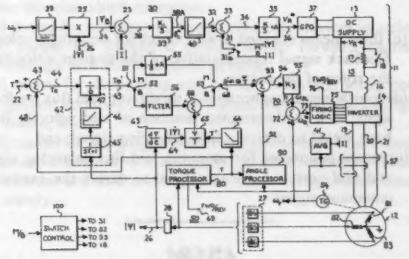
a phase shifting capacitance electrically connected in parallel with said windings.

4,215,304

MOTOR/BRAKE TRANSITIONING FOR AN INVERTER DRIVEN A-C INDUCTION MOTOR

John D. D'Atre, Ballston Lake, N.Y., and Dennis F. Williamson, Kingston, Canada, assignors to General Electric Company, Erie, Pa.

Filed Oct. 2, 1978, Ser. No. 948,193
Int. Cl.² H02P *5/40*
U.S. Cl. 318—758 **7 Claims**



1. In a control system for an a-c electric motor comprising a stator and a rotor and provided with a source of excitation comprising electric power conversion apparatus that supplies a-c power of variable frequency and magnitude to the stator, the motor being capable of developing electromagnetic torque tending to move the rotor relative to the stator due to interaction of current and flux in the motor when excited, the control system including a first control loop for controlling the frequency of the a-c power in response to a command signal and a second control loop for controlling the magnitude of the a-c power, the improvement comprising means operative when the motor is in an electrical braking mode for varying the gain of the first control loop as a direct function of the rate of change of flux magnitude in the motor and as an inverse function of the magnitude of torque developed by the motor.

4,215,305

EXCITATION COMMANDING FOR CURRENT FED MOTOR DRIVES

John D. D'Atre, Ballston Lake, and Allan B. Plunkett, Scotia, both of N.Y., assignors to General Electric Company, Erie, Pa.

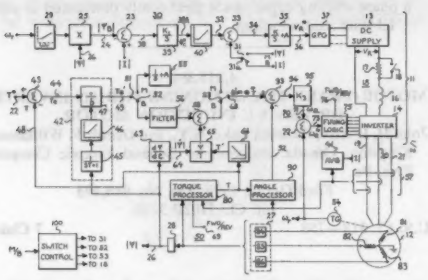
Filed Oct. 2, 1978, Ser. No. 948,194
Int. Cl.² H02P *5/40*
U.S. Cl. 318—803 **8 Claims**

1. In an a-c electric motor control system including a source of excitation comprising electric power conversion apparatus that supplies a-c power of variable frequency and magnitude via electric conductors to a stator of the motor in order to effect movement of a rotor of the motor relative to the stator due to interaction of current and flux in the motor when excited, the system including a first control loop responsive to a torque command signal for regulating the frequency of the a-c power to attain the commanded torque and a second control

loop responsive to an excitation command signal for adjusting the magnitude of the a-c power, the improvement comprising:

(a) first means coupled to said motor for deriving a flux feedback signal representative of the magnitude of air-gap flux in the motor;

(b) second means coupled to the electric conductors for deriving a current feedback signal representative of the magnitude of stator current in the motor;



(c) third means coupled to said motor for deriving a velocity feedback signal representative of the angular velocity of the rotor of the motor;

(d) fourth means connected for modifying said flux feedback signal as a predetermined function of said velocity feedback signal to derive a flux balancing signal; and

(e) means connected for summing said flux balancing signal and said current feedback signal to derive the excitation command signal.

4,215,306

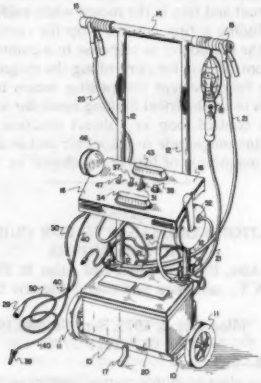
ELECTRICAL TESTING APPARATUS

Richard W. Mace, Granger, Utah, assignor to John W. Ramseyer, Granger, Utah, a part interest

Filed Jan. 15, 1979, Ser. No. 3,297

Int. Cl.[2] G01R *15/12*

U.S. Cl. 320—2 **16 Claims**



1. Apparatus for analyzing operation of the electrical supply system of an automobile and for starting an automobile having a discharged battery, said apparatus comprising:

a mobile cart;

a battery mounted on said cart;

a jumper cable attached at one end thereof to one of the terminals of the battery, with means on the other end of said jumper cable for attachment to the corresponding terminal of the discharged battery in said automobile;

a relay switch, having a pair of normally open contacts, with one of its contacts connected to the other terminal of said battery on said cart;

a second jumper cable attached at one end thereof to the other contact of said relay switch with means on the other end of said second jumper cable for attachment to the other terminal of the discharged battery in said automobile;

a first circuit comprising a switch and a resistor connected in series between said other terminal of said battery and a first test probe;

a second circuit comprising a switch and the coil of said relay switch connected in series between said other terminal of said battery and ground potential;

a shunt switch connected in parallel with the switch in said second circuit; and

a second test probe connected to said second circuit between the switch and coil in said second circuit.

4,215,307

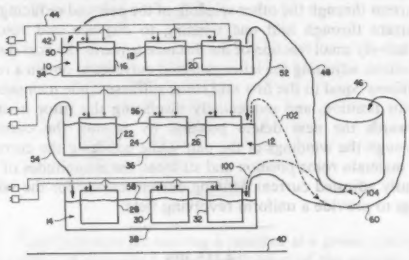
TEMPERATURE CONTROLLED, AUTO TIMED, VARIABLE AMPERAGE CASCADING-WATER FURMATION METHOD FOR USE WITH HIGH ANTIMONY AND MAINTENANCE FREE LEAD-ACID BATTERIES

Lawrence Windisch, Selma, Ala.; John Nees, and Harry Channing, both of Wyomissing, Pa., assignors to General Battery Corporation, Reading, Pa.

Continuation-in-part of Ser. No. 821,527, Aug. 3, 1977, Pat. No. 4,117,387. This application May 30, 1978, Ser. No. 910,942

Int. Cl.[2] H02J *7/00;* **H01M** *10/50*

U.S. Cl. 320—2 **7 Claims**



1. A method for producing batteries having plastic cases comprising the steps of:

(a) separating a plurality of batteries into a plurality of sets, said separating comprising sorting batteries which are at a similar stage of formation into a single set, said separating further comprising the step of sorting a plurality of unformed batteries of a preselected cranking capacity immediately into sets after filling with "one shot" formation electrolyte;

(b) providing a plurality of container means for holding a plurality of battery sets;

(c) placing said sets of batteries into said container means, one set for each container means and electrically interconnecting said batteries in each set for connection to a separate rectifying means for each set;

(d) stacking said plurality of container means at a plurality of positions at different heights above a forming room floor;

(e) connecting each set of said batteries to said separate rectifying means for charging said plurality of batteries in each set;

(f) continuously providing cooling fluid to maintain each of said plurality of container means at a predetermined level, and to circulate said cooling fluid therethrough by causing

said cooling fluid to overflow from said container means; and

(g) forming said sets with said rectifying means while maintaining said cooling fluid within each of said container means at a temperature of between 100° to 125° F., said step of maintaining said cooling fluid at said temperature further comprising the steps of:

(i) conveying said overflow cooling fluid from said container means to a heat removing means for removing heat from said cooling fluid; and

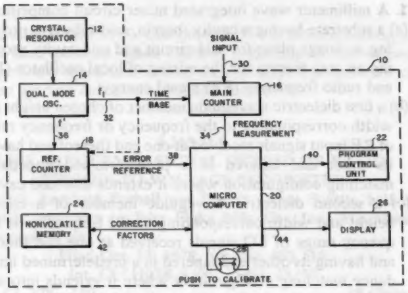
(ii) returning said cooling fluid from said heat removing means to said container means.

4,215,308

SELF CALIBRATING CRYSTAL CONTROLLED FREQUENCY COUNTER METHOD AND APPARATUS

John A. Kusters, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 30, 1978, Ser. No. 955,735
Int. Cl.² G01R 23/02
U.S. Cl. 324—78 D **14 Claims**



1. A method of calibrating a crystal controlled frequency counter, said method comprising the steps of:

a. applying a signal having a preselected frequency to the counter;

b. initiating a calibration mode of said counter;

c. varying the temperature environment of said counter through a selected range of temperatures;

d. generating and separating a first and a second frequency signal, one of said first and second frequency signals having a frequency value that is single-valued with respect to the operating temperature of the counter;

e. measuring the frequency of the signal of step a. using one of said first and second frequency signals as a time-base signal;

f. measuring the frequency of other of said first and second frequency signals;

g. algebraically combining the measured frequency value of step e. and a prestored value that is equivalent to the preselected frequency value of the signal applied to the counter in step a., the calculated value being representative of a frequency correction factor for errors introduced by the crystal controlled frequency counter at the then operating temperature of the counter;

h. calculating the correction factor from the calculated value of step g. and storing that correction factor in a memory location by the measured frequency value of step f. as a pointer thereto; and

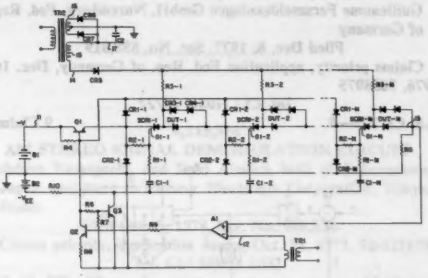
i. repeating steps g. and h. at selected intervals to create a set of correction factors and corresponding memory location pointers over the selected range of temperatures of step c.

4,215,309

HIGH EFFICIENCY SWITCHING CIRCUIT

Raymond A. Frey, 4465 Pacific Coast Hwy., #B-209, Torrance, Calif. 90505

Filed Nov. 17, 1977, Ser. No. 852,294
Int. Cl.² G01R 31/22
U.S. Cl. 324—158 D **48 Claims**



1. A circuit for simultaneously testing a plurality of semiconductor devices which comprises:

(a) means for coupling said semiconductor devices in series;

(b) means for passing a predetermined forward current through said series coupled devices;

(c) means for decoupling said devices from said series connection and for coupling said devices in a parallel configuration; and

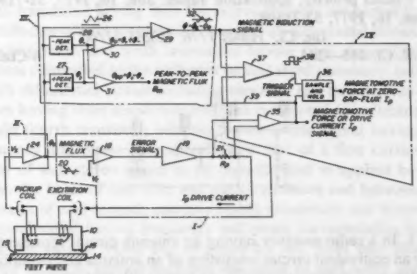
(d) means for applying a predetermined reverse bias voltage to said devices while coupled in parallel, said forward current and said reverse bias voltage being applied alternately.

4,215,310

MAGNETIC TESTING METHOD AND APPARATUS HAVING PROVISION FOR ELIMINATING INACCURACIES CAUSED BY GAPS BETWEEN PROBE AND TEST PIECE

Frederick C. Schwerer, III, Franklin Township, Westmoreland County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Jul. 10, 1978, Ser. No. 916,638
Int. Cl.² G01R 33/00
U.S. Cl. 324—225 **9 Claims**



1. In magnetic testing wherein a test probe carrying excitation and pickup coils is placed against a test piece of magnetic material forming magnetic circuits which comprise the probe, the test piece, flux leakage paths and gaps between the poles of the probe and the surface of the test piece, a-c voltage is applied to said excitation coil to provide a drive current, and an a-c voltage is induced in said pickup coil, an improved method of measuring magnetic and electrical properties of the test piece, comprising controlling the drive current to produce in

the circuit a magnetic flux cycle of a predetermined wave form which becomes zero at points within the cycle, and analyzing the drive current at the zero points in the cycle.

4,215,311
ADAPTIVE DELTA-MODULATION SYSTEM

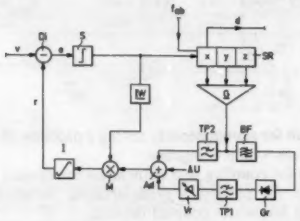
Ludwig Kittel, Heroldsberg, and Dieter Schwarz, Nuremberg, both of Fed. Rep. of Germany, assignors to Te Ka de Felten & Guilleaume Fernmeldeanlagen GmbH, Nuremberg, Fed. Rep. of Germany

Filed Dec. 8, 1977, Ser. No. 858,819

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1976, 2656975

Int. Cl.² H03K *13/22*

U.S. Cl. 375—5 **9 Claims**



5. In an adaptive-delta-modulation transmission system, in combination, means furnishing a data-signal-modulated input signal v the different values of which constitute the symbols to be transmitted and having a symbol transmission rate of f_s symbols per second; controllable-step-size delta-modulating means operative for receiving the input signal v and utilizing the latter as a modulating signal producing a delta-modulated output signal d; means operative for deriving from said delta-modulated output signal d an f_s spectral component and generating an evaluation signal dependent upon the amplitude of that spectral component; and means operative in dependence upon said evaluation signal for varying the quantization step size of the delta-modulating means.

4,215,312
RADIO RECEIVER

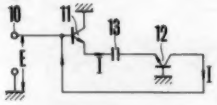
Kazuo Takayama, Kobe, Japan, assignor to Fujitsu Ten Limited, Kobe, Japan

Filed Jun. 14, 1978, Ser. No. 915,570

Claims priority, application Japan, Jun. 16, 1977, 52-71408; Jun. 16, 1977, 52-71409

Int. Cl.² H04B *1/18;* **H03H** *11/00*

U.S. Cl. 455—284 **6 Claims**



1. In a radio receiver having an antenna circuit represented by an equivalent circuit consisting of an antenna electromotive force, an antenna capacitance in series with said electromotive force and a cable capacitance in parallel therewith and a tuning circuit for the selection of stations upon receiving the output of said antenna circuit, the improvement comprising:

a negative capacitance circuit comprising a capacitor and a control circuit including one or two transistors said negative capacitance circuit, upon receiving an input voltage corresponding to the antenna electromotive force on an input terminal thereof, applies said input voltage or a voltage in proportion thereto to said capacitor thereby providing a current determined by the reactance of said capacitor to said input terminal, said negative capacitance at least partially cancelling the cable capacitance and the antenna capacitance.

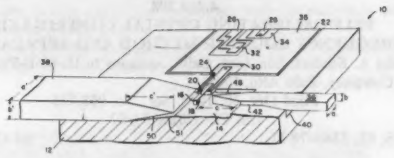
4,215,313
DIELECTRIC IMAGE GUIDE INTEGRATED HARMONIC PUMPED MIXER

Yu-Wen Chang, Ranchos Palos Verdes, and Jeffrey A. Paul, Torrance, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 31, 1979, Ser. No. 44,782

Int. Cl.² H04B *1/06*

U.S. Cl. 455—326 **8 Claims**



1. A millimeter wave integrated mixer circuit comprising:

(a) a substrate having a cavity therein, said substrate providing an image plane for said circuit and said cavity providing an area therein for the mixing of local oscillator (LO) and radio frequency (RF) signal energy;

(b) a first dielectric waveguide member of chosen height and width corresponding to the frequency or frequency range of RF input signals received at one end thereof and having its other end tapered in a predetermined impedance matching configuration where it extends into said cavity;

(c) a second dielectric waveguide member of a chosen height and width corresponding to the frequency or frequency range of LO signals received at one end thereof and having its other end tapered in a predetermined impedance matching configuration where it extends into said cavity region, said frequency of said LO signals being substantially one-half that of said RF signals;

(d) first and second reverse poled mixer diodes connected in parallel in said cavity region and positioned adjacent said tapered ends of said dielectric waveguide members to receive both RF and LO signals from said first and second dielectric image guides respectively, and operative to generate an intermediate frequency (IF) signal which is approximately equal in frequency to the RF input signal frequency less twice the frequency of the local oscillator signal.

(e) means adjacent said substrate and said mixer diodes and conductively coupled to said mixer diodes for conducting IF signal currents away from said mixer cavity.

4,215,314
DEPHASER CIRCUIT

Francis Addor, Neuchatel, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland

Filed Dec. 2, 1977, Ser. No. 857,182

Claims priority, application Switzerland, Dec. 21, 1976, 16066/76

Int. Cl.² H03K *5/18*

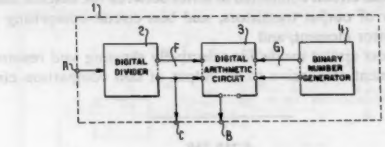
U.S. Cl. 328—55 **8 Claims**

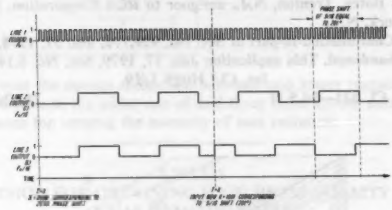
1. A phase-shifting circuit adapted to receive a first periodic signal of frequency f_0 comprising:

a digital counter having N stages for cyclically counting the number of periods of the signal of frequency f_0 and delivering in response thereto a second periodic signal of frequency $f_0/2^N$ represented by a binary number M;

a number generator for providing a selectable binary number K;

digital adder means connected to said counter and said number generator for receiving said number M and said number K and instantaneously delivering a binary number M+K equal at all times to the true sum of said number M





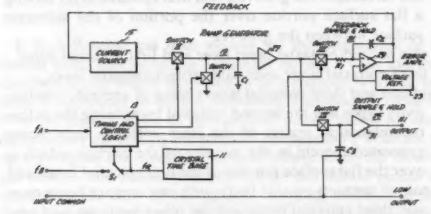
and said number K, said number M+K corresponding to a third periodic signal equal in frequency to said second periodic signal and having a phase shift therebetween of an amount determined by said number K.

4,215,315

LOW FREQUENCY SIGNAL PERIOD OR RATIO (PERIOD)-TO-VOLTAGE CONVERTER

Dennis L. Lambert, Bothell, and Paul R. Lantz, Seattle, both of Wash., assignors to John Fluke Mfg. Co., Inc., Mountlake Terrace, Wash.

Filed Oct. 13, 1978, Ser. No. 951,114
Int. Cl.[2] H03K *9/06, 13/02, 13/32*
U.S. Cl. 328—140 **18 Claims**



1. A converter for converting signal period information into analog voltage form comprising:

a ramp generator including a capacitor and a switch means, said switch means connected to said capacitor for controlling the charging and discharging of said capacitor;

a current source connected to said ramp generator for supplying current to said ramp generator for charging said capacitor of said ramp generator;

feedback means connected to said current source for controlling the magnitude of current produced by said current source;

a feedback switch means connected between the output of said ramp generator and said feedback means;

output means for storing information in analog voltage form;

output switch means connected between the output of said ramp generator and said output means; and,

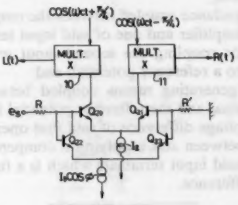
control means for receiving signals whose period information is to be converted into analog voltage form and, in accordance therewith, controlling: (a) said switch means of said ramp generator such that said capacitor of said ramp generator is alternately charged and discharged in a cyclical manner; and, (b) said feedback switch means and said output switch means such that at the end of each charging cycle of said capacitor of said ramp generator the output of said ramp generator is alternately applied to said feedback means and to said output means.

4,215,316

AM STEREO SIGNAL DEMODULATION CIRCUIT

Tadahiro Yamaguchi, and Koki Aizawa, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 5, 1978, Ser. No. 948,834
Claims priority, application Japan, Oct. 12, 1977, 52-122179
Int. Cl.[2] H03D *1/02*
U.S. Cl. 329—50 **15 Claims**

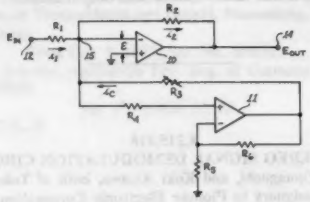


1. A stereo signal demodulation circuit comprising a first differential circuit including first and second transistors having emitters connected commonly; means for applying an input stereo signal to be demodulated between the bases of said first and second transistors; a second differential circuit including third and fourth transistors having their emitters commonly connected, said signal to be demodulated being applied between bases of said third and fourth transistors; a third differential circuit including fifth and sixth transistors having their respective emitters connected to the collector of said first transistor; a fourth differential circuit including seventh and eighth transistors having their respective emitters connected to the collector of said second transistor; a fifth differential circuit including ninth and tenth transistors having their respective emitters connected to the collector of said third transistor; and a sixth differential circuit including eleventh and twelfth transistors having their respective emitters connected to collector of said fourth transistor; wherein, when a first signal having frequency and phase corresponding to that of a first carrier signal of said stereo signal to be demodulated is applied between the bases of said fifth and sixth transistors and between the bases of said seventh and said eighth transistors, and when a second signal having frequency and phase corresponding to a second carrier signal out of phase by 90° from said first carrier signal is applied between the bases of said ninth and tenth transistors and between the bases of said eleventh and twelfth transistors, a first output signal containing a first channel signal is derived between a common collector connection of said fifth and eighth transistors and a common collector connection of said sixth and said seventh transistors, and a second output signal containing a second channel signal is derived between a common collector connection of said ninth and twelfth transistors and a common collector connection of said tenth and eleventh transistors.

4,215,317
COMPENSATED OPERATIONAL AMPLIFIER CIRCUIT

Robert J. Traynor, Tempe, Ariz., assignor to Omni Spectra, Inc., Tempe, Ariz.

Filed Nov. 27, 1978, Ser. No. 964,259
Int. Cl.[2] H03F 3/45, 1/30
U.S. Cl. 330—256 14 Claims

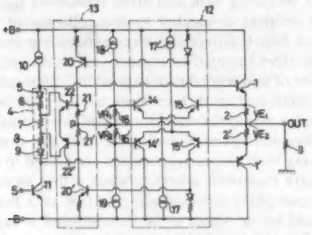


1. A compensated operational amplifier circuit which comprises:
(a) a first operational amplifier having first and second input terminals and an output terminal;
(b) means for coupling the first input terminal to an input signal source;
(c) a first impedance coupled between the output terminal of said first amplifier and one of said input terminals;
(d) means for coupling the second input terminal of said amplifier to a reference potential; and
(e) current generating means coupled between said first input terminal and the reference potential for sensing the internal voltage difference of said first operational amplifier therebetween and supplying a compensating current to one of said input terminals which is a function of said voltage difference.

4,215,318
PUSH-PULL AMPLIFIER

Yoshihiro Kawanabe, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 7, 1978, Ser. No. 967,534
Claims priority, application Japan, Dec. 8, 1977, 52-147645
Int. Cl.[2] H03F 3/21
U.S. Cl. 330—268 4 Claims

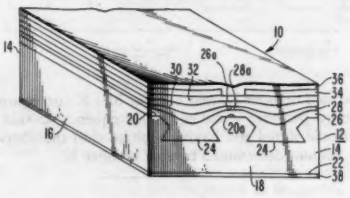


1. In a push-pull amplifier of the type including a pair of output transistors and a pair of emitter resistors, a respective resistor connected to the emitter of a respective output transistor at one terminal, the other terminals of the emitter resistors being commonly connected to an output point, the improvement comprising:
(a) a comparison circuit for comparing the voltages across each of said emitter resistors with a predetermined voltage, said comparison circuit comprising a pair of differential circuits, one of said differential circuits including a pair of first transistors having emitters commonly connected and a first constant current source for controlling the emitter current of said pair of first transistor, the other of said differential circuits including a pair of second transistors having emitters commonly connected and a second constant current source for controlling the emitter current of said pair of second transistors;
(b) a bias circuit connected in series between the bases of said pair of output transistors, said bias circuit comprising a resistor element; and
(c) short circuit means for selectively shorting said resistor element responsive to an output of said comparison circuit.

4,215,319
SINGLE FILAMENT SEMICONDUCTOR LASER

Dan Botez, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 929,776, Jul. 31, 1978, abandoned. This application Jan. 17, 1979, Ser. No. 4,143
Int. Cl.[2] H01S 3/19
U.S. Cl. 331—94.5 H 21 Claims



1. A semiconductor laser comprising:
a body of semiconductor material including a substrate having a surface and a pair of spaced, substantially parallel dove-tailed shaped grooves in said surface, said body having a pair of end surfaces between which said grooves extend, said end surfaces being reflective to light with at least one of said end surfaces being partially transparent to light
a first epitaxial layer over said surface of the substrate and the surfaces of the grooves, said first epitaxial layer having a flat surface portion over the portion of the substrate surface between the grooves,
a thin second epitaxial layer over said first epitaxial layer,
a third epitaxial layer over said second epitaxial layer,
said first and third epitaxial layers being of opposite conductivity types and the second epitaxial layer being the active recombination region of the laser with the light being generated therein in the vicinity of the portion which is over the flat surface portion of the first epitaxial layer, and
a pair of contacts on said body with one contact being over said third epitaxial body and the other being on said substrate.

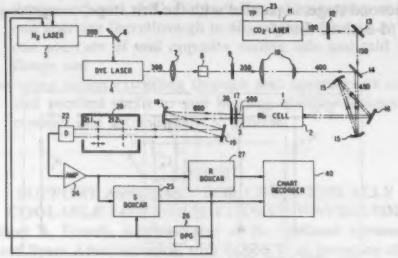
4,215,320
FAR-INFRARED LASER TUNED BY THE DYNAMIC STARK EFFECT

Tao-Yuan Chang, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 27, 1978, Ser. No. 890,263
Int. Cl.[2] H01S 3/22
U.S. Cl. 331—94.5 G 7 Claims

1. A tunable far-infrared laser comprising:
a material having at least one lowest energy level and three other levels, and further having a laser transition existing between an upper transition level and a lower transition level from said three other levels;
pump means for creating a population inversion between said upper transition level and said lower transition level of said laser transition;

characterized in that said laser further includes means for illuminating said material by radiation whose energy is



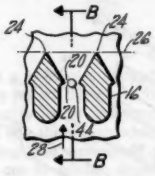
near the energy difference between said lower transition level and the other one of said three other levels; and means for varying the intensity of said radiation.

4,215,321

METHOD FOR OBTAINING HIGH BEAM QUALITY IN A GAS DYNAMIC LASER

Edward A. Pinsley, North Palm Beach, and Richard A. Schmidtke, Tequesta, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 5, 1978, Ser. No. 893,906
Int. Cl.[2] H01S 3/22
U.S. Cl. 331—94.5 G **6 Claims**



1. In a flowing gas laser system for the production of an optical beam and including a channel having a flow axis in a direction along which the velocity of a gaseous working medium is increased to permit stimulated emission of radiation from the energy levels of the medium, nozzle means for aerodynamically expanding the medium to supersonic velocity, an optical region for extracting optical power from the flowing gas stream, and means disposed within the nozzle means for perturbing the flow of the gaseous working medium to produce a density disturbance to oppose flow density disturbances produced by shock waves or expansion waves emanating from nozzle-wall intersections.

4,215,322

HIGH FREQUENCY OSCILLATING CIRCUIT USING AT CUT QUARTZ CRYSTAL VIBRATOR

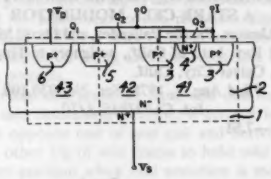
Eiichi Iwanami, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

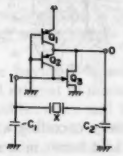
Filed Aug. 11, 1978, Ser. No. 933,093
Claims priority, application Japan, Aug. 29, 1977, 52/103394
Int. Cl.[2] H03B 5/36; H03F 3/16
U.S. Cl. 331—116 FE **2 Claims**

1. An oscillating circuit for use in a timepiece and the like comprising: a semiconductor substrate of one conductivity type having a high impurity concentration; an epitaxial semiconductor layer of the same conductivity type as said substrate formed on said substrate and having a low impurity concentration; a first region of the same conductivity type as the substrate formed in a surface portion of said epitaxial layer; a second region of the opposite conductivity type formed in a surface portion of said epitaxial layer around said first region and having a high impurity concentration; a third region of the same conductivity type as said second region formed in a surface portion of said epitaxial layer a short distance from said second region; a fourth region of the same conductivity type as said second region formed in a surface portion of said epitaxial layer a short distance from said third region;

said substrate, first region, the portion of said epitaxial layer under said first region, and second region forming respectively the source, drain, channel and gate regions of a longitudinal junction field effect transistor;

said second region, third region and the portion of said epitaxial layer between said second and third regions





forming respectively the collector, emitter and base regions of one lateral transistor; and

said fourth region, third region and the portion of said epitaxial layer between said third and fourth regions forming respectively the emitter, collector and base regions of another lateral transistor; a quartz crystal vibrator operable at a high oscillating frequency of more than several MHz; means including first and second capacitors connected to said vibrator for adjusting the vibrator oscillating frequency; an input terminal connected to said second region; a common output terminal connected to said first and third regions; means connecting said first capacitor between said input terminal and said substrate; and means connecting said second capacitor between said output terminal and said substrate.

4,215,323

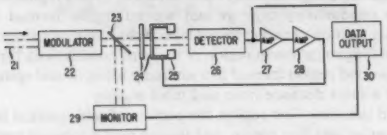
INSTABILITY AND REGENERATIVE PULSATION IN OPTICAL CAVITIES

Samuel L. McCall, Jr., Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 13, 1978, Ser. No. 869,368
Int. Cl.[2] H01S 3/10
U.S. Cl. 332—7.51 **25 Claims**

1. An optical cavity enclosing a medium substantially free of amplifying inverted transitions, whose medium and/or cavity characteristics are adjusted so that the equation $F(\gamma)=0$ has a

root with a positive real part and so that the associated dynamic input/output properties include regenerative pulsation



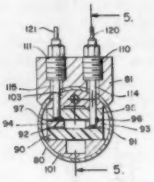
in the positive slope steady-stated regions of the characteristic input/output curve.

4,215,324

SPATIAL ENCODING OF A LASER BEAM BY MEANS OF A STARK CELL MODULATOR

Richard L. Abrams, Pacific Palisades, and David M. Henderson, Playa Del Rey, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 1, 1978, Ser. No. 930,108
Int. Cl.[2] H01S *3/10*
U.S. Cl. 332—7.51 **10 Claims**



1. Apparatus for spatially encoding a laser beam across at least one dimension of said beam in a manner indicative of position in said beam, said encoding being determined by the relative amplitude and frequency of first and second modulation potentials, said apparatus comprising:

a housing;

a pair of endcaps optically transmissive to said laser beam and affixed to respective ends of said housing to form a gas-tight structure;

a molecular absorbing gas disposed within said structure;

a plurality of electrodes disposed parallel and coextensive with each other, positioned symmetrically about a central longitudinal axis of said housing, a first pair of said electrodes being coextensive and lying in the same plane and offset from said central longitudinal axis in one direction, and a second pair of said electrodes being coextensive and lying in the same plane and offset from the central longitudinal axis in the opposite direction from said first pair of said electrodes respective ones of said first pair of said electrodes being oppositely disposed from respective ones of said second pair of said electrodes; and

connector means extending through said housing for applying said first and second modulation potentials across respective opposed electrodes.

4,215,325

MINIMAL DISTORTION VIDEO BANDPASS FILTER

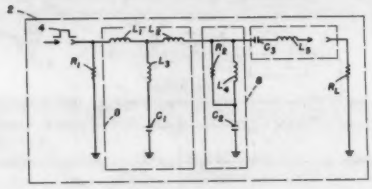
Francis N. Sansone, Kensington, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 9, 1979, Ser. No. 19,039
Int. Cl.[2] H03H *7/08, 7/14, 7/04*
U.S. Cl. 333—20 **4 Claims**

1. A bandpass filter having a mark-and-space format RF rectangular pulse input and producing a sinusoidal output in response to the rectangular pulse input, comprising, in combination:

a first state comprising a resistance connected to the ground at one end and to the pulse input at the other,

a second stage, in parallel with the first stage, comprising an M-derived filter,



a third stage, connected to the second stage, comprising a notch filter, and

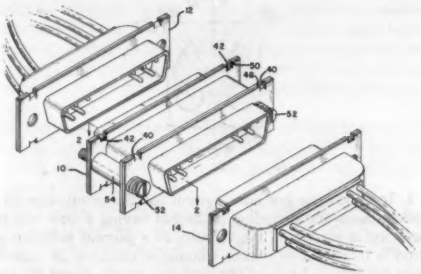
a fourth stage, connected to the third stage, comprising means for blocking out d.c. signal components and peaking the output response at a desired frequency in the prescribed bandwidth.

4,215,326

FILTERED ADAPTER

Robert D. Hollyday, Hershey, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 16, 1978, Ser. No. 869,550
Int. Cl.[2] H03H *7/04*; H01R *33/80, 13/66*
U.S. Cl. 333—182 **8 Claims**



1. A filtered adapter for retrofitting existing electrical connectors of known configurations to provide RFI/EMI filtering, comprising:

a housing member having an overall profile matable with a known electrical eonnector and having oppositely directed mating sides, an outwardly directed flange extending from the periphery of each said mating side, said flanges being spaced substantially parallel to each other, a ground plane secured to and extending across said member substantially intermediate the mating sides thereof, said ground plane having a plurality of apertures therein each aligned with a respective terminal of said known electrical connector;

a like plurality of filter sleeves each secured in a respective one of said apertures of said ground plane;

a like plurality of terminals each mounted in a respective one of said filter sleeves, each said terminal having a pin configuration on a first end and socket configuration on the opposite end;

a profiled shell secured to and extending outwardly from each said mating side of said housing member and providing a profile for mating with said known electrical connector;

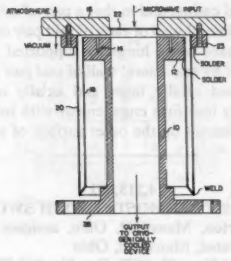
an outwardly directed flange extending from the periphery of each said profiled shell abutting against said flange of a corresponding said mating side, each said mating side flange and said shell flange thereagainst having at least one aperture therethrough in alignment with said at least one aperture of said opposite mating side and said shell flange and

securing means extending through said apertures to secure said profiled shells to said housing member flanges and connect said ground plane to ground.

4,215,327
SUPPORT ASSEMBLY FOR CRYOGENICALLY COOLABLE LOW-NOISE CHOKED WAVEGUIDE

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Frank E. McCrea, Arcadia, Calif.

Filed Aug. 31, 1978, Ser. No. 938,293
Int. Cl.² H01P *1/08, 5/00, 1/04, 1/16*
U.S. Cl. 333—252 **15 Claims**

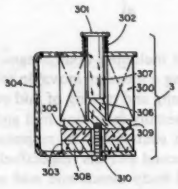


1. A support for a low-noise choked waveguide coupling into a cryogenically cooled device microwave energy passing through a mounting flange at one temperature, said support comprising coaxial low thermal conduction tubes of different diameter surrounding said waveguide, said tubes being connected in cascade, one to another at only one end of the one adjacent to another, to form one single conductive path through tubes thus connected in cascade from said mounting flange to a second flange, said second flange having a quarter wavelength choke at a lower temperature for connection to said device, and a vacuum seal at each connection of one tube to another, thereby to provide a long thermal conduction path folded into a small space, said cascade connected tubes also serving to form a vacuum enclosure for said waveguide.

4,215,328
CIRCUIT BREAKER HAVING AN ELECTRONIC FAULT SENSING AND TRIP INITIATING UNIT

Ferdinand E. Chabot, and James P. McGinnis, both of Cedar Rapids, Iowa, assignors to Square D Company, Palatine, Ill.

Filed Apr. 17, 1978, Ser. No. 886,692
Int. Cl.² H01H *71/24, 9/20*
U.S. Cl. 335—6 **3 Claims**



1. A circuit protective device to detect fault conditions in an electrical power circuit and protect said power circuit against such fault conditions, comprising:

circuit interruption means operable to interrupt said power circuit on occurrence of a fault condiditon,

solid state interruption initiating means to detect the occurrence of a fault condition in said power circuit and to thereupon initiate interruption of said power circuit,

delatching means operatively associated with said solid state interruption initiating means operated by said solid state means upon receipt of an electrical signal from said solid state interruption initiating means,

said delatching means including an annular coil, a unitary one piece, U-shaped magnet frame having spaced legs and receiving said coil between said legs with the axis of said coil extending toward said legs, an armature positioned along the axis of said coil adjacent one end of said coil and extending through one leg of said frame and the respective coil end for movement in one direction along said axis toward said coil to a reset position and movable in the opposite direction along said axis from said coil to a delatching position,

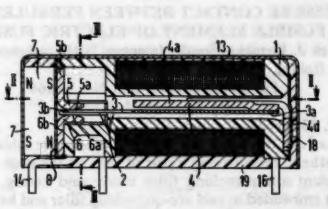
a spring to bias said armature from said coil for movement toward said delatching position, a magnet located adjacent the opposite end of said coil and between said coil and the other leg of said frame to hold said armature in said reset position when said armature is moved to said reset position, said coil being connected to said solid state trip initiating means for operation by said solid state means to generate a field opposite to the field of said magnet to attenuate the attraction of force of said magnet on said armature upon occurence of a fault condition, whereby said spring moves said armature to said delatching position, and

a flux concentrator having a boundary located within the boundary of said magnet to minimize flux leakage to said frame and located between said magnet and the opposite end of said coil, said concentrator having a portion of reduced area extending into said coil toward said armature to provide an area of high flux concentration between said portion and a portion of said armature for retaining said armature in said reset position against the bias of said spring in response to movement of said armature toward said reset position to place said portions in adjacent positions.

4,215,329
POLARIZED ELECTROMAGNETIC MINIATURE RELAY

Ulrich Kobler, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 12, 1978, Ser. No. 905,229
Claims priority, application Fed. Rep. of Germany, May 23, 1977, 2723220
Int. Cl.² H01H *51/22*
U.S. Cl. 335—78 **18 Claims**



1. Polarized electromagnetic miniature relay with a tongue armature which is arranged within the coil body approximately along the coil axis and is mounted at one end, and the free end of which is arranged between two yoke plates located

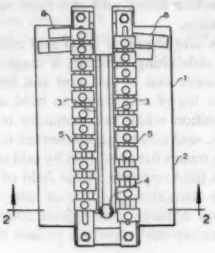
opposite one another which also each form a pole shoe which is coupled to a permanent magnet arrangement arranged on one end of the coil body, said permanent magnet arrangement being designed with four poles with two polarization directions which are opposite to one another and parallel to said coil axis, the coupling surfaces between said two pole shoes and in each case of two unlike pole faces of said permanent magnet arrangement being at right angles to said coil axis.

4,215,330

PERMANENT MAGNET PROPULSION SYSTEM

Emil T. Hartman, Detroit, Mich., assignor to Ethel Hartman, Richmond, Ind. and Charles Helin, Estate of, Detroit, Mich., Detroit Bank and Trust Company, executor, part interest to each

Filed Dec. 20, 1977, Ser. No. 862,344
Int. Cl.[2] H01F *7/02*
U.S. Cl. 335—306 **15 Claims**



1. A propulsion system wherein an ordered arrangement of permanent magnets provides the propulsion force comprising: a base structure; a pair of tracks mounted on top of said base structure, said tracks being in spaced parallel relationship to each other; a first row of permanent magnets mounted on top of said base structure, directly outboard from and adjacent to one of said tracks, with all of the north seeking poles of said row of magnets pointed towards said tracks and all of the south seeking poles pointed away from said track; a second row of permanent magnets mounted on top of said base structure, directly outboard from and adjacent to the other of said tracks, with all of the south seeking poles of said second row of magnets pointed towards said other track and all of the north seeking poles pointed away from the other said track; at least one ball positioned between and supported by said tracks, said ball being constructed from a ferro-magnetic material whereby the magnetic field of said first and second row of magnets propels said ball along said tracks; and a clamping means for positioning and retaining each of the magnets of said first and second rows onto said base structure.

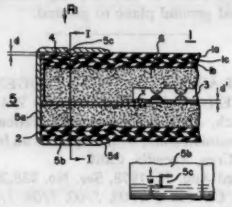
4,215,331

PRESSURE CONTACT BETWEEN FERRULES AND FUSIBLE ELEMENT OF ELECTRIC FUSES

Frederick J. Kozacka, South Hampton, N.H., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Feb. 7, 1979, Ser. No. 10,164
Int. Cl.[2] H01H *85/16*
U.S. Cl. 335—252 **12 Claims**

1. In an electric fuse comprising a deformable tubular casing of a synthetic resin having a pair of rims on the ends thereof, a pulverulent arc-quenching filler inside said casing, a fusible element embedded in said arc-quenching filler and having ends bent around said pair of rims from the inside of said casing to the outer surface thereof, a pair of ferrules mounted on said casing over said ends of said fusible element on the outer surface of said casing, and said ends of said fusible element on the outer surface of said casing and said pair of ferrules being conductively connected by solderless means, each of said pair of ferrules having a radially inwardly directed indentation engaging under pressure said ends of said fusible element on the outer surface of said casing and clamping said ends of said fusible element on the outer surface of said casing against said casing, wherein the novel feature consists in that the end surfaces of said pair of ferrules are situated in their entirety axially outwardly from said pair of rims of said casing and do not



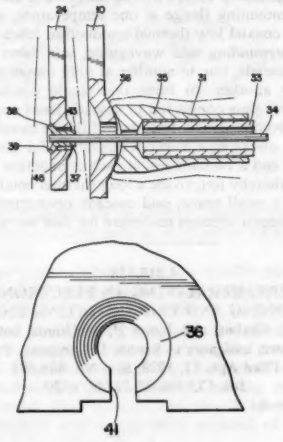
re-enter into said casing, and in that a pair of tabs is formed by the metal of the lateral wall of each of said pair of ferrules, each of said pair of tabs being hingedly supported on the axially inner end thereof by said lateral wall of said pair of ferrules and slanting from said axially inner end axially outwardly and radially inwardly into firm engagement with one of said ends of said fusible element on the outer surface of said casing.

4,215,332

PROBE THERMOSTAT WITH SWIVEL

Gerald R. Wharton, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Nov. 20, 1978, Ser. No. 962,072
Int. Cl.[2] H01H *37/36*
U.S. Cl. 337—394 **9 Claims**



1. In a thermostat including body means, a switch on said body means including a member movable relative to the body means to cause opening and closing of said switch, a thermally responsive probe assembly including first and second elements movable relative to each other in response to temperature changes, first and second swivels respectively connecting said first element to said body means and said second element to said member for pivotal movement about first and second centers, relative movement between said elements causing relative movement between said centers and operation of said

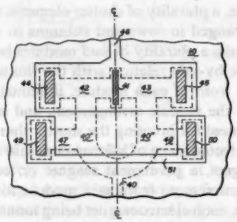
switch, the improvement comprising a substantially spherical first seat on said body means, and a substantially spherical second seat on said movable member each forming a part of one of said swivels, said body means and said member each being formed with a passageway extending from an edge to its spherical seat along which said second element is laterally moved to its assembled position during the assembly of said thermostat, said passageways and said swivels being formed so that said passageways do not affect the action of said swivels after assembly of said thermostat, portions of said switch being aligned with and substantially adjacent to one end of said probe preventing easy axial installation of said second element into its associated seat.

4,215,333

RESISTOR TERMINATION

Jen-Yen Huang, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 2, 1978, Ser. No. 947,667
Int. Cl.[2] H01C 1/14
U.S. Cl. 338—322 **7 Claims**



1. An integrated circuit element comprising an elongated body of material having substantial electrical resistance and conductive end contacts for connecting said body to metallization associated with said integrated circuit, at least one of said end contacts comprising:

an enlarged end portion of said body terminating an elongated portion thereof, said elongated portion being contoured to provide a preponderance of the resistance of said elongated body, said end portion being configured to create a first pair of resistance regions extending perpendicular to the centerline of said elongated portion and to have mirror symmetry about said centerline; and

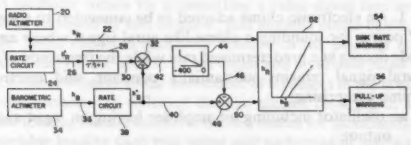
metal contact means connected to the ends of said first pair of resistance regions that extend away from said elongated portion, said metal contact means being extended to connect to said metallization.

4,215,334

AIRCRAFT EXCESSIVE DESCENT RATE WARNING SYSTEM

Charles D. Bateman, Bellevue, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Feb. 9, 1978, Ser. No. 876,305
Int. Cl.[2] G01C 5/00; G01S 9/04
U.S. Cl. 340—27 AT **33 Claims**



1. In a system for warning of an excessive rate of aircraft descent, having means for generating a signal representing the rate of descent of the aircraft, means for generating a signal representing altitude of the aircraft above ground, means for comparing long-term components of the descent rate signal with the altitude signal and for detecting a predetermined relationship between said signals to initiate an excessive descent rate warning, an improvement comprising:

means for generating a terrain altitude rate signal representing the aircraft's rate of change of altitude with respect to the ground; and

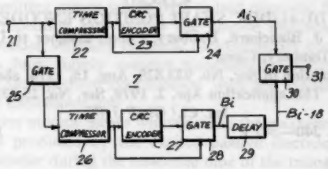
means, responsive to said terrain altitude rate signal, for varying the predetermined relationship between the long-term components of the descent rate and the altitude signals required to initiate the warning as a function of said terrain altitude rate signal.

4,215,335

DIGITAL SIGNAL TRANSMISSION METHOD

Toshitada Doi, Yokohama, and Takashi Ito, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 28, 1977, Ser. No. 865,200
Int. Cl.[2] G06F 11/00; G08C 25/00
U.S. Cl. 371—69 **25 Claims**



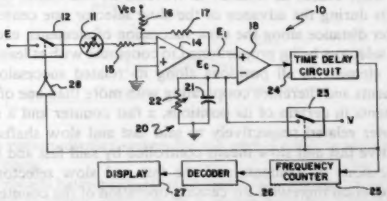
1. A method of reducing errors in processing digital signals grouped into digital words and which comprise first multi-bit signals, said method comprising the steps of: selecting a predetermined group of each digital word group of said first multi-bit signals to comprise second multi-bit signals by selecting by part of the digital signals of each of said digital words, each digital word group and said predetermined group thereof comprising related signal groups; delaying one of said signal groups relative to another of said groups; and combining the delayed signal groups in interleaved sequence with subsequent, relatively undelayed signal groups to form composite, sequential signals.

4,215,336

APPARATUS AND METHOD FOR STABILIZATION OF A THERMISTOR TEMPERATURE SENSOR

Thomas W. Smith, Fort Myers Beach, Fla., assignor to McNeil-Akron, Inc., Akron, Ohio

Filed Apr. 17, 1978, Ser. No. 896,974
Int. Cl.[2] G01K 7/22; G01N 7/24; G06G 7/20
U.S. Cl. 340—177 CA **41 Claims**



1. An apparatus for use with a semiconductor temperature sensor having electrical response characteristics that vary non-linearly with temperature, a material constant, beta, that

varies with temperature, and providing an output signal indicative of ambient temperature comprising:

means for generating a time dependent signal having a configuration that offsets the non-linear temperature dependence of the sensor output signal;

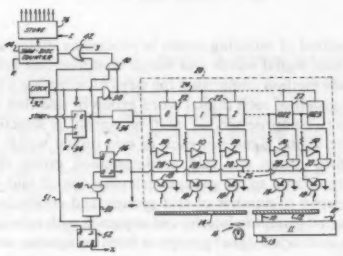
means for comparing the sensor output signal with said offsetting signal and generating an output signal whenever the sensor output signal at least equals that of said offsetting signal; and

means for reducing the effective value of the material constant so as to yield a sensor output signal that is substantially reduced from what it otherwise would have been, thereby substantially extending the range of linear output from the sensor without the deleterious effects of self-heating.

4,215,337
DUAL-DISC SHAFT POSITION ENCODER

Stanley J. Blanchard, Danbury, Conn., assignor to Unimation Inc., Danbury, Conn.

Continuation of Ser. No. 933,828, Aug. 15, 1978, abandoned. This application Apr. 2, 1979, Ser. No. 25,935
Int. Cl.[2] G06F *3/00*
U.S. Cl. 340—347 P 12 Claims

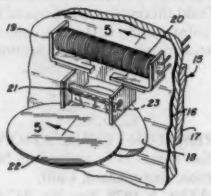


1. A shaft position encoder including mechanism having a fast shaft and a slow shaft coupled together by gearing, said mechanism including the shaft whose position is to be encoded, said fast and slow shafts having a fast selector and a slow selector, respectively, a fast succession of elements and a slow succession of elements arranged in circles opposite the paths of said selectors, respectively, at least the slow succession of elements being distributed with uniform center-to-center distances and the gear ratio of said mechanism being such that the fast shaft causes its selector to traverse its succession of elements during the advance of the slow selector one center-to-center distance along the slow succession of elements, each of said selectors being proportioned to cooperate with at least one said element in all positions along its related succession of elements and therefore cooperating with more than one of said elements in certain of its positions, a fast counter and a slow counter related respectively to said fast and slow shafts, respective fast and slow means controlled by said fast and slow successions of elements and the fast and slow selectors in cooperation therewith for causing operation of the counters in accordance with the number of elements between one end of each said succession of elements and a said element cooperating with its related selector, and means at least partially controlled by said fast counter for determining unambiguously the number of pulses to be registered by the slow counter.

4,215,338
MODULE FOR PRESENTING ALPHA NUMERIC INFORMATION

Guenther Selig, 2138 Rugen Rd., Glenview, Ill. 60025

Continuation of Ser. No. 806,999, Jun. 16, 1977. This application Feb. 12, 1979, Ser. No. 11,203
Int. Cl.[2] G08B *5/26*
U.S. Cl. 340—373 3 Claims

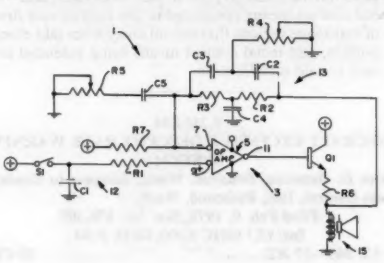


1. A module for presenting alpha-numeric information comprising a frame, a plurality of shutter elements mounted on said frame and arranged in rows and columns to define an alpha-numeric module, a plurality of said modules being arranged in horizontal side-by-side relation with the shutters thereof positioned on the front of each module, illuminating means positioned behind the module arrangement, and means associated with each element for pivoting the shutter thereof to provide a part of a preselected piece of information, said means including an electromagnet, a permanent magnet on each shutter and actuating means remote from said module for actuating said electromagnet, each electromagnet being mounted on the front of said frame adjacent its associated shutter and equipped with pole-pieces arranged in close proximity to the permanent magnet of said associated shutter to oppose the magnetic field of said permanent magnet and pivot said associated shutter.

4,215,339
ELECTRONIC CHIME

John E. Durkee, Hemlock, N.Y., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 23, 1979, Ser. No. 32,709
Int. Cl.[2] G08B *1/00*
U.S. Cl. 340—384 E 28 Claims



1. An electronic chime adapted to be connected to a source of power for sounding a chime-like aural signal whose amplitude decays at a predetermined rate while the frequency of said aural signal remains substantially constant, said electronic chime comprising:

an oscillator including an amplifier having an input and an output;

means for generating an input voltage signal for said oscillator, said input voltage signal decaying from an initial value;

feedback means connected to said amplifier input and re-

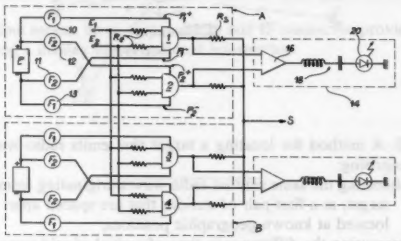
sponsive to the output of said amplifier for impressing a desired frequency upon said voltage input signal; and a speaker responsive to the output of said oscillator.

4,215,340

PROCESS FOR THE AUTOMATIC SIGNALLING OF FAULTS OF A STATIC AUTOMATIC MODULE AND A MODULE FOR REALIZING THE PROCESS

Jean Lejon, Choisel, France, assignor to Controle Bailey, Clamart, France

Filed Mar. 17, 1978, Ser. No. 887,469
Claims priority, application France, Apr. 1, 1977, 77 09909
Int. Cl.[2] G08B *29/00*
U.S. Cl. 340—507 **10 Claims**



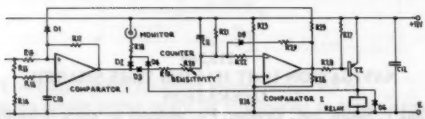
1. A process for the automatic signalling of faults of an automatic static safety module comprising at least one pair of identical parallel logic circuits and having a first positive continuous supply connection and a second negative continuous supply connection, whereby the output of each logic circuit can have one or another of two logic states depending on whether it is connected to the first or second supply connection, wherein a.c. voltages of different frequencies are superimposed on the d.c. voltages, the presence of beats between the a.c. voltages appearing at the outputs is detected, and as a function of the presence or absence of said beats cases of non-agreement of the logic states of the circuits are signalled.

4,215,341

INTRUSION OR MOVEMENT DETECTOR

Martin T. Cole, 3 David St., East Bentleigh, Victoria, Australia

Filed Jan. 18, 1978, Ser. No. 870,603
Claims priority, application Canada, Jan. 19, 1977, 270056
Int. Cl.[2] G08B *13/24*
U.S. Cl. 340—552 **5 Claims**



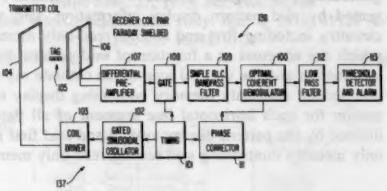
1. An intrusion movement detector comprising an oscillator means for generating a radio signal, an antenna means coupled to said oscillator means for transmitting a radio signal into an area to be surveyed by said detector, said antenna means exhibiting an initial radiation resistance relative to the position of objects (if any) in the area to be surveyed and a variable radiation resistance relative to the movement of an object in the area surveyed exclusive of reflected doppler signals resulting in a variable loading on said oscillator means, means for monitoring said variable loading such that when said variations in loading reach a predetermined threshold level, said monitoring means activates a signal or alarm means indicating detection of an intrusion or relocation of an object in the area surveyed.

4,215,342

MERCHANDISE TAGGING TECHNIQUE

Peter Horowitz, Silver Spring, Md., assignor to Intex Inc., Bethesda, Md.

Filed Mar. 31, 1978, Ser. No. 892,283
Int. Cl.[2] G08B *13/24*
U.S. Cl. 340—572 **2 Claims**



1. A system for indicating the presence of a passive electronic tag transponder, which is a self-resonant structure with non critical sharpness-of-resonance and center frequency values that produces magnetic oscillations when excited of sufficiently low frequency to penetrate metal, which comprises:

(a) transmitting means which by a pulsed magnetic field of fixed repetition rate excites the passive electronic tag transponder, whereby magnetic oscillations are produced which form lightly damped sinusoidal magnetic field bursts in repetitive coordination with the transmitting means excitations; and

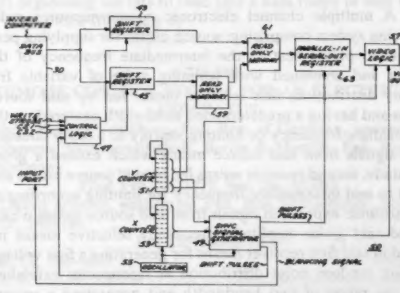
(b) receiver module means which detects the magnetic oscillations produced by the excited passive electronic tag transponder during the residence time of the transponder in the portion of said field which is received by said receiver means, said receiver means coherently accumulating the received spectral energy of each tag burst of any received signal amplitude during the residence time of the transponder within the portion of said field which is received by said receiver means.

4,215,343

DIGITAL PATTERN DISPLAY SYSTEM

Masakazu Ejiri, and Hirotada Ueda, both of San Jose, Calif., assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 16, 1979, Ser. No. 12,800
Int. Cl.[2] G06K *15/20*
U.S. Cl. 340—711 **15 Claims**



1. A pattern display system for use with a cathode ray tube, comprising:

a keyboard having selectively actuable key switches, each of said switches representing a predetermined symbol or function;

processing means responsive to said keyboard switches for storing information representative of symbols corresponding to the symbols represented by actuated symbol key

switches, and for performing predetermined functions corresponding to functions represented by actuated function key switches, said processing means further providing as an output pattern display information representative of the individual patterns necessary for the display of said symbols; and

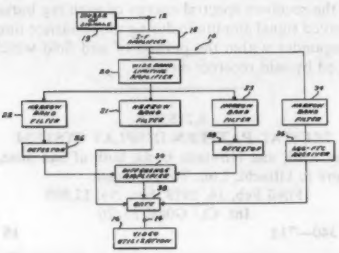
video circuitry responsive to said processing means for generating video signals indicative of the patterns represented by said pattern display information, said video circuitry including first and second read-only memories which are accessed as a function of said pattern display information and the vertical scan of the cathode ray tube, said second read-only memory containing display information for each horizontal line segment of all patterns utilized by the pattern display system and said first read-only memory controlling said second read-only memory.

4,215,344

MULTIPLE CHANNEL ELECTRONIC COUNTERMEASURES RADAR RECEIVER

Calvert F. Phillips, Jr., Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 15, 1963, Ser. No. 324,138
Int. Cl.[2] G01S 7/36
U.S. Cl. 343—18 E **4 Claims**



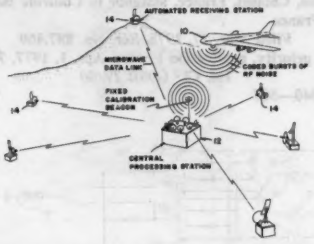
1. A multiple channel electronic countermeasures radar receiving system comprising: source means for supplying periodic echo pulses beat to the intermediate frequency of the system and combined with jamming noise of variable frequency distribution, first receiver means fed by said source means and having a predetermined bandwidth centered on the intermediate frequency or limiting sharply to a fairly constant level signals from said source means which exceed a given amplitude, second receiver means fed by said source means and tuned to said intermediate frequency for limiting according to a logarithmic expression signals from said source means which exceed said given amplitude, frequency selective means included in said first receiver means for generating a first voltage defining random noise distribution at frequencies extending over the range of said bandwidth and generating a second voltage defining random noise distribution at frequencies offset from said intermediate frequency by a predetermined amount, video utilization means, and gate means controlled by said frequency selective means for gating the output of said first receiver means to said video utilization means in response to said first voltage and gating the output of said second receiver means to said video utilization means in response to said second voltage.

4,215,345

INTERFEROMETRIC LOCATING SYSTEM

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Peter F. MacDoran, Pasadena, Calif.

Filed Aug. 31, 1978, Ser. No. 938,581
Int. Cl.[2] G01S 3/02
U.S. Cl. 343—112 R **8 Claims**



5. A method for locating a target that emits radio waves, comprising:

detecting the same emitted radio waves originating from the target, at a first pair of stations that are spaced apart and located at known geographic positions;

measuring the difference in time of arrival of said waves at said first pair of stations;

detecting the same emitted radio waves originating from said source, at a second pair of stations that are spaced apart and located at known geographic positions;

measuring the difference in time of arrival of said waves at said second pair of stations;

detecting the same emitted radio waves orginating from the target at a third pair of stations that are positioned at widely space altitudes;

measuring the difference in time of arrival of said waves at said third pair of stations;

calculating the geographic location and altitude of a point which is located a different distance from the two stations of each pair wherein each difference distance is equal to the time difference in wave arrival times the speed of light; and wherein

said steps of detecting each comprise detecting a train of wideband noise-like signals at each station of the pair, and cross correlating the signals detected by each pair of stations to determine the amount of delay of one train of noise signals relative to the other, at which the trains are matched.

4,215,346

NAVIGATION UNIT HAVING TIME SHARED OPERATION

Frank P. Smith, 2nd., Dresher, Pa., assignor to Narco Scientific Industries, Inc., Fort Washington, Pa.

Filed Feb. 8, 1978, Ser. No. 876,094
Int. Cl.[2] G01S 5/02
U.S. Cl. 343—113 R **11 Claims**

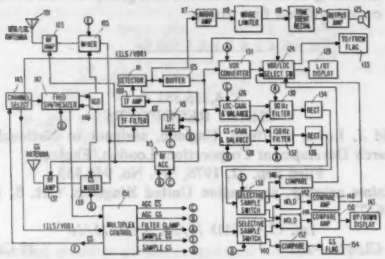
1. A navigational receiver having a time-shared mode of operation for simultaneously receiving a plurality of different navigational signals, comprising:

means for receiving each said different signal;

RF means associated with said receiving means for RF amplifying and RF mixing each said different signal;

IF means for processing each said different signal by time-shared operation, said IF means being connected to said RF means, wherein said time-shared operation is on a multiplex basis of alternately processing first one of said

different signals then another involving a processing dead time; and

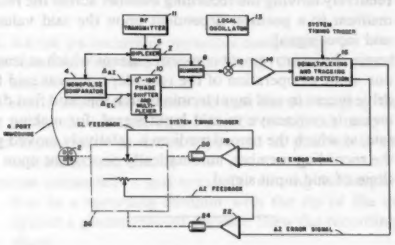


output means, being responsive to said IF means, for providing a display of navigational information.

4,215,347
TARGET SEEKER SIMULATOR

Edward C. Jarrell, Damascus; Donald R. Marlow, Highland; Howard B. Tetens, Rockville, and Joseph F. Gulick, Clarksville, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 15, 1978, Ser. No. 960,991
Int. Cl.[2] G01S *3/22*
U.S. Cl. 343—117 R **6 Claims**



1. A target seeker simulator system comprised of:

a drone missile having means for transmitting an output signal, and

means for directing the output signal of the transmitting means at the target while the drone missile is in flight, wherein the output signal directing means comprises:

means, located proximate to the target, for generating a beacon signal aimed at the drone missile,

means, provided on the drone missile, for receiving the beacon signal,

an antenna comprising the transmitting means and beacon signal receiving means, and

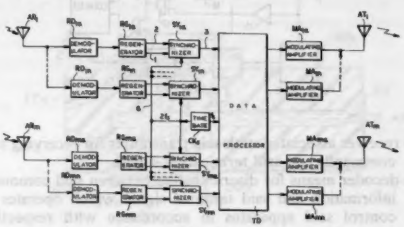
means for reorienting the antenna in response to the received beacon signal, and

diplexer means for simultaneously transmitting the output signal and receiving the beacon signal.

4,215,348
METHOD OF AND SYSTEM FOR SYNCHRONIZING DATA RECEPTION AND RETRANSMISSION ABOARD COMMUNICATION SATELLITE

Giovanni Cordaro, Milena; Cristiano Dall'Olio, Turin; Duccio Di Pino, Turin, and Eugenio Guarene, Turin, all of Italy, assignors to CSELT-Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Mar. 27, 1979, Ser. No. 24,445
Claims priority, application Italy, Apr. 4, 1978, 67729 A/78
Int. Cl.[2] H04L *7/00*
U.S. Cl. 370—97 **8 Claims**



1. A method of timing the reading of data bits in a stream of digital signals intermittently received by a relay station from a remote transmitting station, said digital signals arriving with a bit cadence f_g close to a clock frequency f_s available at said relay station, comprising the steps of:

(a) generating a square wave of frequency $2f_s$;

(b) extracting a timing signal corresponding to said bit cadence f_g from a signal stream of limited duration detected at said relay station;

(c) sampling said square wave, in response to said timing signal, at an instant substantially coinciding with the midpoint of an initial bit period of the detected signal stream, said bit period having a length $1/f_g$ approximately equaling a clock cycle $1/f_s$;

(d) selecting, on the basis of the sample obtained in step (c), one of two mutually interleaved trains of synchronizing pulses each having a cadence corresponding to said clock frequency f_s, the first synchronizing pulse so selected occurring in one of the two middle quarters of a bit period;

(e) reading the bits of the detected signal stream at the instants of occurrence of the synchronizing pulses of the selected train; and

(f) organizing the bits to read into a data frame in step with said clock frequency f_s.

4,215,349
REMOTE CONTROL SYSTEM FOR AN ELECTRICAL APPARATUS

Robert Reiner, Neubiberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 26, 1979, Ser. No. 15,003
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1978, 2809796
Int. Cl.[2] H04B *7/00*
U.S. Cl. 340—695 **6 Claims**

1. A remote control system for operating an electrical apparatus by means of transmitted binary coded information comprising:

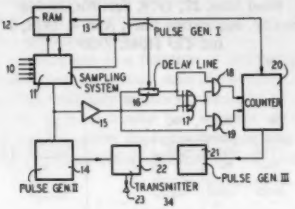
a sampling system having a plurality of user actuated input means which produce binary coded commands, said sampling system producing binary coded commands associated with respective inputs;

a first pulse generator controlled by said sampling system which provides a sampling pulse for said sampling system;

a second pulse generator and associated control means for

producing a termination signal upon de-actuation of any of said inputs;

a transmitter connected to said first and second pulse generators for transmitting respective pulses produced by each said generator corresponding to input commands and said termination signal;



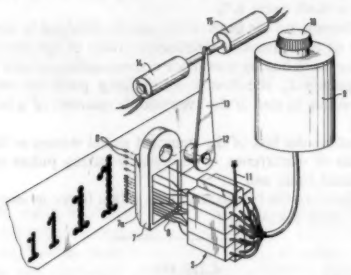
a receiver associated with said transmitter for receiving said commands and said termination signal;

a decoder means for discriminating between said command information and said terminal signal which operates to control said apparatus in accordance with respective received commands and which terminates operation of said receiver when said termination signal is received.

4,215,350
INK JET PRINTING APPARATUS WITH TWO DIFFERENT JET SPACINGS

Klaus H. Mielke, and Ulf H. Mielke, both of 82, Radavägen, S-435 00 Mölnlycke, Sweden

Filed Apr. 19, 1979, Ser. No. 31,517
Claims priority, application Sweden, Apr. 19, 1978, 7804496
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—75 **5 Claims**



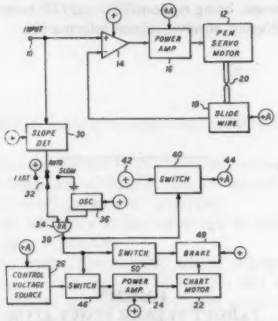
1. In ink jet printing apparatus comprising a plurality of ink jet nozzles, means for supporting said nozzles in a row in which the axes of the nozzles define a common plane, a solenoid valve for controlling the supply of pressurized ink to each of said nozzles, a control circuit for each of said solenoid valves, and a pattern generator having a plurality of output leads connected to said control circuits, said pattern generator being arranged successively to select predetermined output leads or combinations of output leads and to cause an operating pulse to be transmitted through said selected output leads and control circuits to the respective solenoid valves controlled thereby,

the improvement comprising electric switch means arranged in a first position to connect each of said output leads to a respective one of the control circuits of a first group of said solenoid valves controlling the ink supply to a first group of nozzles in said row arranged at a uniform pitch, and in a second position to connect each of said output leads to a respective one of the control circuits of a second group of solenoid valves controlling the ink supply to a second group of nozzles in said row arranged at a pitch equal to twice the pitch of said first group of nozzles and including nozzles within said first group as well as nozzles outside of said first group.

4,215,351
CHART RECORDERS

David J. Lowe, Sheffield, England, assignor to National Research Development Corporation, London, England

Filed Sep. 21, 1978, Ser. No. 944,559
Claims priority, application United Kingdom, Oct. 5, 1977, 41486/77
Int. Cl.[2] G01D *15/24, 9/00, 15/16*
U.S. Cl. 346—136 **17 Claims**



1. A chart recorder, comprising:

an input terminal for receiving an electrical input signal a value of which is to be recorded;

first drive means for relatively moving a length of record medium past a recording member at a selectable controlled rate; and

second drive means connected to said input terminal for relatively moving the recording member across the record medium to a position dependent upon the said value of said input signal;

wherein the improvement comprises means which at least in one mode of operation of the recorder connects said first drive means to said input terminal such that said first drive means is responsive to said input signal, for making said rate, at which the record medium is relatively moved past the recording member, automatically dependent upon the slope of said input signal.

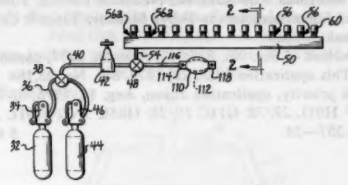
4,215,352
INKING SYSTEM WITH SATURATION CONTROL MEANS FOR MULTI-PEN RECORDERS

William C. Corwin, La Grange, Ill., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 9, 1978, Ser. No. 914,089
Int. Cl.[2] G01D *15/16*
U.S. Cl. 346—140 R **9 Claims**

1. A non-clogging inking system comprising a non-pressurized ink supply including a dye in a suitable solvent, a movable recording pen element in engagement with a medium to which ink is to be supplied, a first flexible tubular member connected to said ink supply and having relatively little evaporation of said solvent through the walls thereof, and a second flexible tubular member connected between said first tubular member and said recording pen, said second member being relatively permeable to said solvent and having a length such

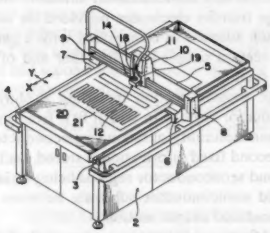
that evaporation of said solvent through said second member is substantially balanced by diffusion of dye along the length of said second member as said evaporated solvent is replaced by ink in said first tubular member.



4,215,353
INK JET RECORDING APPARATUS WITH TRIAL RUN AT SIDE

Shozo Kaieda, Yokohama; Masayuk Mutoh, Kawasaki, and Kuniaki Kamimura, Atsugi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Sakai, Japan

Division of Ser. No. 783,031, Mar. 30, 1977. This application Mar. 23, 1979, Ser. No. 23,235
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—140 R **7 Claims**

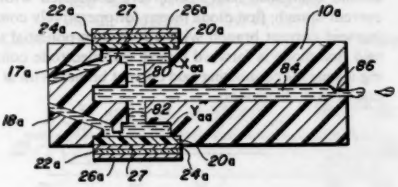


1. An ink jet recording apparatus comprising:
at least one ink tank for containing therein a substantial amount of ink;
a nozzle connected to said ink tank for discharging the ink within the ink tank to the outside of said ink tank;
an acceleration electrode supported in position in spaced relation to said nozzle;
means connected to said nozzle for moving the nozzle relative to a recording medium with the tip of the nozzle spaced a predetermined distance from the recording medium;
means connected to said ink tank and said nozzle and responsive to a command signal for applying a jetting force to the ink to effect the jetting of the ink from the nozzle towards the recording medium in accordance with a command signal;
means for generating a return signal and connected to said moving means for supplying a return signal to said moving means to cause the ink tank together with the nozzle to move to a predetermined position other than where ink is to be deposited for recording; and
means connected to said ink tank and said nozzle for forcing droplets of ink to be jetted from the nozzle when said ink tank together with the nozzle has been moved to said predetermined position, whereby after the ink tank together with the nozzle has been moved to the predetermined position by the operation of the return signal generating means, droplets of ink are successively jetted on a trial basis independently of the jetting of ink resulting from the application of the command signal.

4,215,354
SUPPRESSION OF CROSS-COUPLING IN MULTI-ORIFICE PRESSURE PULSE DROP-EJECTOR SYSTEMS

Stig-Göran Larsson, Carrollton, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 24, 1978, Ser. No. 963,475
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—140 R **3 Claims**



1. A multiple ink jet assembly comprising:
a fluid reservoir for containing a fluid;
a plurality of compressible chamber means for holding fluid and including means for rapidly decreasing the volume of said chamber means in response to a predetermined signal, said chamber means being connected by fluid passages to said fluid reservoir; and
a plurality of orifices, each of said orifices being connected to at least two chamber means by fluid passages wherein each of said chamber means is adapted to restrict the passage of a pressure pulse therethrough.

4,215,355
IMPROVED ELECTROGRAPHIC RECORDING APPARATUS EMPLOYING AN IMPROVED DRIVE CIRCUIT

Chad Z. Moore, Brecksville, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Filed Nov. 24, 1978, Ser. No. 963,404
Int. Cl.[2] G03G *15/044*; G01D *15/06*
U.S. Cl. 346—155 **20 Claims**

1. An electrographic recording apparatus for charging the surface of a record medium having a charge retentive surface with latent electrostatic image, said apparatus comprising:
a plurality of recording electrodes, each recording electrode mounted with an area thereof in close proximity to the charge retentive surface;
a plurality of complementary electrodes mounted with an area of each in electrical cooperative relationship with the record medium, each complementary electrode mounted adjacent at least one of said recording electrode;
means for applying a first voltage of one polarity to at least one selected recording electrode and a second voltage of opposite polarity to at least one complementary electrode adjacent to the at least one selected recording electrode;

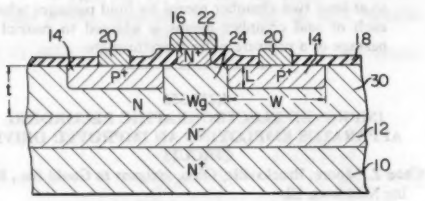
said voltage applying means including at least one driver circuit comprising: a current branch; current control means for controlling current flow through said current branch, said current control means operatively connected with said current branch; electrical storage means operatively connected at a first end with said current branch and with said current control means; switching means comprising at least first and second controlled leads and a switch control means for controlling current flow between said first and second controlled leads, said switch control means operatively connected with a second end of said electrical storage means, said first controlled lead operatively connected with a high voltage supply, said second controlled lead operatively connected with said current branch; first diode means for operatively connecting said current branch with a reference potential when said first diode is forward biased; and electrode connecting means for connecting said current branch with at least one of said electrodes.

4,215,356

JUNCTION FIELD EFFECT TRANSISTOR

Mari Kato, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1978, Ser. No. 897,775
Claims priority, application Japan, Apr. 27, 1977, 52/49273
Int. Cl.² H01L *29/80*
U.S. Cl. 357—22 **5 Claims**



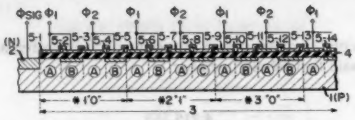
1. A vertical type junction field effect transistor comprising:
a first semiconductor layer of a first type conductivity and having a low resistivity, said first semiconductor layer having first and second surfaces;
a second semiconductor layer of said first type conductivity and having a resistivity higher than that of said first semiconductor layer, said second semiconductor layer having a first surface disposed on said second surface of said first semiconductor layer and a second surface;
a third semiconductor layer of said first type conductivity and having a resistivity lower than that of said second semiconductor layer, said third semiconductor layer having a first surface disposed on said second surface of said second semiconductor layer and a second surface;
gate regions of a second type conductivity selectively disposed in regions of said third semiconductor layer and extending from said second surface thereof to positions spaced between said first and second surfaces thereof;
adjacent said gate regions defining therebetween at least one channel region in a first portion of said third semiconductor layer; and
a second portion of said third semiconductor layer, defined between each said gate region and said second surface of said second semiconductor layer, having a thickness not smaller than one-half of the width of said channel region, defined between said adjacent gate regions.

4,215,357

CHARGE TRANSFER DEVICE STORED WITH FIXED INFORMATION

Susumu Kohyama, Kawasaki, and Nobuhisa Kubota, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 825,067, Aug. 16, 1977, abandoned.
This application Mar. 23, 1979, Ser. No. 23,184
Claims priority, application Japan, Aug. 16, 1976, 52-97022
Int. Cl.² H01L *29/78*; G11C *19/28*; H03K *5/00*; H01L *29/04*
U.S. Cl. 357—24 **5 Claims**



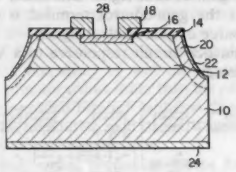
1. A charge transfer device, comprising:
a charge supplying source section;
a charge transfer section coupled at one end to said charge supplying source section and including a semiconductor substrate of a first conductivity type, an insulation layer provided on said semiconductor substrate and a plurality of charge transfer electrodes provided on said insulation layer, each adapted to be supplied with a gate signal;
an output section coupled to the other end of said charge transfer section;
said charge transfer section including a plurality of first semiconductor regions in which first fixed information is stored, and a plurality of second semiconductor regions in which second fixed information is stored, each of said first and second semiconductor regions being serially disposed upon said semiconductor substrate between said source section and said output section;
each of said first semiconductor regions including a first pair of subregions and a second pair of subregions disposed adjacent to said first pair of subregions, each of said first and second pairs of subregions including a first type subregion and a second type subregion disposed adjacent to said first type subregion with each said subregion having a discrete charge transfer electrode disposed thereover;
each of said second semiconductor regions including a third pair of subregions and a fourth pair of subregions disposed adjacent to said third pair of subregions, each of said third pair of subregions including a first type subregion and a second type subregion disposed adjacent to said first type subregion, each of said fourth pair of subregions including a first type subregion and a third type subregion disposed adjacent to said first type subregion, each of said first, second, and third type subregions having a discrete charge transfer electrode disposed thereover;
each of said discrete charge transfer electrodes disposed over said first and third pairs of subregions adapted to be supplied with a first gating signal voltage, and each of said discrete charge transfer electrodes disposed over said second and fourth pairs of subregions adapted to be supplied with a second gating signal voltage;
each of said subregions exhibiting a gate voltage-surface potential characteristic curve such that the characteristic curves for said first type subregion and for said third type subregion are approximately parallel and the characteristic curve of said second type subregion is such that it intersects with the characteristic curves of said first and said third type subregions.

4,215,358

MESA TYPE SEMICONDUCTOR DEVICE

Manabu Wataze; Kazuhisa Takahashi; Saburo Takamiya, and Shigeru Mitsui, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1977, Ser. No. 846,492
Claims priority, application Japan, Nov. 1, 1976, 51/131396
Int. Cl.[2] H01L *29/06*
U.S. Cl. 357—56 6 Claims



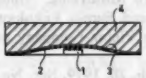
1. A mesa type semiconductor device comprising:
a first semiconductor layer of one type conductivity having a mesa portion;
a second semiconductor layer of the opposite type conductivity disposed on said mesa portion of said first semiconductor layer having a top surface opposite said mesa portion of said first semiconductor layer and forming a first PN junction with said first semiconductor layer, said first PN junction having a circumferential portion disposed at the circumference of said mesa portion of said first semiconductor layer; and
a third semiconductor layer having the same type conductivity as said first semiconductor layer covering the edges of said first and second semiconductor layers at said circumferential portion of said first PN junction forming a second PN junction with said second semiconductor layer extending to said top surface of said second semiconductor layer.

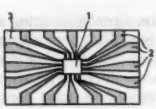
4,215,359

SEMICONDUCTOR DEVICE

Gijsbertus J. H. Schermer, and Paul Breuning, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 8, 1978, Ser. No. 958,769
Claims priority, application Netherlands, Dec. 13, 1977, 7713758
Int. Cl.[2] H01L *23/48*
U.S. Cl. 357—70 7 Claims





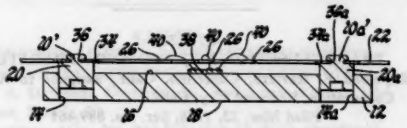
1. A semiconductor device comprising an insulating flexible foil having conductors on one side of the foil extending from the edge towards the center, and a semiconductor element having contacts which are connected to the ends of the conductors at the central portion of the foil, characterized in that a reinforcement member is provided on the side of the foil remote from the conductors which is present at least near the edges of the foil, said reinforcement member being connected to the foil in an adhering manner and having a pre-shaped contour so as to bend the foil in such manner that the surface of the semiconductor element remote from the foil and the ends of the conductors situated near the ends of the foil are situated substantially in the same plane.

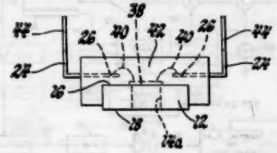
4,215,360

POWER SEMICONDUCTOR DEVICE ASSEMBLY HAVING A LEAD FRAME WITH INTERLOCK MEMBERS

Charles T. Eytcheson, Macy, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 9, 1978, Ser. No. 959,340
Int. Cl.[2] H01L *23/48, 29/44, 29/52*
U.S. Cl. 357—70 7 Claims





7. A semiconductor device heat sink for assembly with a lead frame strip wherein said substrate has a recess therein in predetermined location with respect to a chip mounting area on said substrate, and movable lead frame interlock means within said opening for locating said lead frame with respect to said chip mount area, movement of said interlock means in said recess confined to only one plane to permit plural predetermined heat sink-lead frame positions with respect to that plane, and said interlock means frictionally retained in said recess to maintain a predetermined heat sink-lead frame disposition in said plane, once so moved, whereby plural temporary predetermined heat sink-lead frame dispositions are obtained.

4,215,361

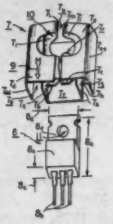
WINGED SELF-FASTENED HEAT SINKS FOR SEMICONDUCTOR DEVICES

Alfred F. McCarthy, Belmount, N.H., assignor to Aavid Engineering, Inc., Laconia, N.H.

Filed Sep. 12, 1978, Ser. No. 941,550
Int. Cl.[2] H01L *23/02, 23/48, 29/44*
U.S. Cl. 357—81 4 Claims

1. A resilient sheet-metal unitary heat sink unit comprising an open-ended channel-shaped body portion of substantially rectangular cross-section closed at the bottom and having upstanding parallel sides along spaced edges thereof and having top wall surfaces including two top wall parts extending from the sides toward but short of each other, leaving a slot therebetween, means projecting downwardly from said top wall parts toward the interior of said channel-shaped body portion in position to develop a resilient interference fit with part of an electronic semiconductor package of predetermined size when the latter is disposed within said body portion, and

cooling-fin means extending upwardly in integral continuation of said top wall surfaces and thence flaring laterally substantially parallel with said top wall surfaces and in spaced relation thereto.



4,215,362

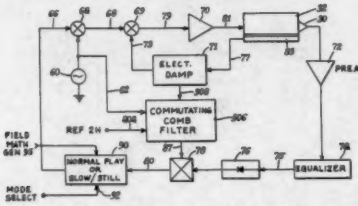
TRACK SELECTION METHOD AND APPARATUS

Raymond F. Ravizza, Cupertino, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Mar. 23, 1978, Ser. No. 889,461

Int. Cl.[2] G11B *21/08, 5/55, 5/56*

U.S. Cl. 358—8 **22 Claims**



1. In a recording and/or reproducing apparatus having transducing means operatively supported by rotation means for scanning a magnetic tape along a plurality of adjacent discrete tracks on the tape, the rotation means including movable means carrying the transducing means and effecting movement of the transducing means in opposite directions along a path generally transverse to the direction of said tracks in response to signals being applied thereto, a circuit for automatically selecting the proper one of said discrete tracks, said circuit comprising:

means responsive to the scan of a track by the transducing means and a track reference signal for generating a first signal indicative of said transducing means scanning a wrong one of said tracks relative to said track reference signal;

means for producing a second signal indicative of the position of said movable means; and,

means responsive to said first and said second signals for relatively positioning said transducing means to tape position to thereby register said transducing means on the proper track.

4,215,363

GATED, VARIABLE-GAIN AMPLIFIER

David J. Borlaug, Elba, N.Y., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 26, 1978, Ser. No. 973,790

Int. Cl.[2] H04N *9/537*

U.S. Cl. 358—21 R **10 Claims**

1. A gated, variable gain circuit comprising:

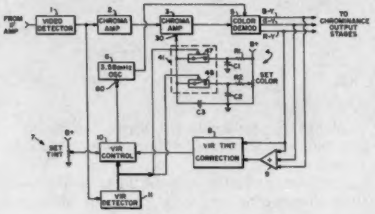
a gain-controlled amplifier having an input coupled to a source of signals and having a gain-control terminal, the amplifier gain being determined by the control signal applied to the gain-control terminal;

a first source of substantially constant gain-control signal;

a second source of variable gain-control signal;

gain switching means coupled to the gain-control terminal and to the first and second sources of gain-control signal and responsive to a signal indicative of a prescribed operating condition so that under the prescribed operating condition the gain-control terminal is coupled to the first source of gain-control signal and under other operating conditions the gain-control terminal is coupled to the second source of gain-control signal.

7. A chrominance circuit responsive to a VIR signal, said circuit comprising:



a variable-gain amplifier having an input coupled to a chrominance signal including a VIR component and having a gain-control terminal;

gain selecting means having an output coupled to the gain-control terminal for selectively establishing the gain of the variable-gain amplifier in response to a signal indicating the presence or absence of the VIR signal;

a first source of gain-control signal coupled to a first input of the gain-selecting means; and

a second source of gain-control signal coupled to a second input of the gain-selecting means, whereby during the absence of a VIR signal the first source is coupled through the gain-selecting means to the gain-control terminal and during the presence of the VIR signal the second source is coupled through the gain-selecting means to the gain-control terminal.

4,215,364

COLOR TELEVISION SIGNAL GENERATING APPARATUS

Itsuo Takanashi; Shintaro Nakagaki; Tadayoshi Miyoshi, all of Yokohama; Koichiro Motoyama, Ninomiya; Kenichi Miyazaki, Sagamihara, and Sumio Yokokawa, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 28, 1979, Ser. No. 16,092

Claims priority, application Japan, Mar. 3, 1978, 53-23590

Int. Cl.[2] H04N *9/07*

U.S. Cl. 358—47 **10 Claims**

1. A color television signal generating apparatus comprising:

a color-resolving striped filter comprising a plurality of groups of filter stripes, said groups being disposed parallelly and consecutively in sequentially repeated arrangement, each of said groups comprising at least three filter stripes from among

a first filter stripe having a light transmission characteristic such as to transmit the light of one of the three primary colors of an addition mixture color,

a second filter stripe having a light transmission characteristic such as to transmit the light of a mixed color of the primary color transmitted through said first filter stripe and one of the other two primary colors, and

a transparent third filter stripe transmitting white light,

said at least three filter stripes being arranged parallelly and consecutively in a specific sequence;

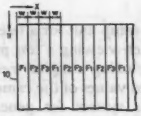
a camera tube provided with said color-resolving striped filter disposed on the front surface thereof and operating to send out as an output signal a superimposed signal comprising, in superimposition,

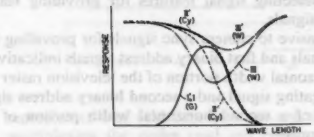
a direct wave signal containing signals of the three primary colors of said addition mixture color and

a high-band component signal comprising a group of modulated color signals representable as signals resulting from the amplitude modulation respectively of a carrier wave of a frequency equal to a space frequency determined by the number of said groups of filter stripes and carrier wave components of frequencies having higher harmonic relationships to the frequency of said carrier wave by the signals of two primary colors other than the primary color of the light transmitted through said first filter stripe;

separation means for separating said direct wave signal from the output signal of said camera tube;

high-band component signal producing means for obtaining said high-band component signal or a signal equivalent thereto from the output signal of said camera tube;





first envelope detection means for producing as output a demodulated signal in accordance with an envelope resulting from a successive connection of peak values of the positive wave of the output signal of said high-band component signal producing means;

second envelope detection means for producing as output a demodulated signal in accordance with an envelope resulting from a successive connection of peak values of the negative wave of the output signal of said high-band component signal producing means; and

operational means for obtaining three primary-color signals by operating the output signals of said separation means and first and second envelope detection means,

at least two of the filter stripes of said first, second, and third filter stripes of said color-resolving striped filter having transmission characteristics which have been so selected that graphical curves indicating said transmission characteristics mutually intersect.

4,215,365

X-RAY DIAGNOSTICS INSTALLATION COMPRISING AN ELECTRONIC TRANSMISSION CHANNEL FOR THE X-RAY IMAGE

Joerg Haendle, and Hartmut Sklebitz, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

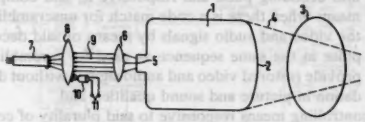
Continuation of Ser. No. 793,138, May 2, 1977. This application Feb. 21, 1979, Ser. No. 13,683

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1976, 2651307

Int. Cl.[2] H04N *5/32*

U.S. Cl. 358—111 **3 Claims**

1. An x-ray diagnostics installation comprising an electronic transmission channel, transmitting the x-radiation issuing from the patient, with a television pickup tube, characterized in that for the purpose of avoiding signal compression in the dark image regions an illumination device is arranged in the optical path of rays in front of said television pickup tube, for the weak, diffuse, illumination of the target of said television



pickup tube, and means comprising said illumination device for preventing negative charging of the light sensitive layer of the target during scanning of the target in the absence of an input light signal.

4,215,366

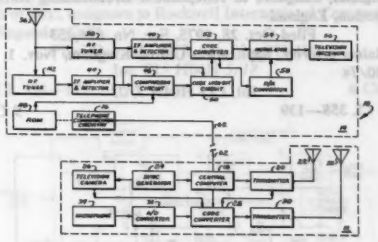
SUBSCRIBER-LIMITED RECEPTION TELEVISION BROADCAST SECURITY ENCODER-DECODER SYSTEM

Richard A. Davidson, Deerfield, Ill., assignor to Feature Film Services, Skokie, Ill.

Continuation of Ser. No. 843,740, Oct. 19, 1977, abandoned. This application Apr. 24, 1979, Ser. No. 33,020

Int. Cl.[2] H04N *7/16*; H04K *1/04*

U.S. Cl. 358—124 **64 Claims**



1. A subscription television system for scrambling and unscrambling of standard television signals having horizontal scan lines that include horizontal synchronizing signals, vertical synchronizing signals, and video signals, and accompanying audio signals to enable reception of the video and audio signals in an intelligible manner only by authorized subscribers, said system comprising:

(1) transmitting means comprising:

(a) means for scrambling video signals by inversion of the video portion of some horizontal scan lines in a line-by-line fashion on a pseudo-random basis to produce a picture having some video signals inverted and others not inverted which produces a substantially unintelligible visual display;

(b) means for scrambling audio signals;

(c) means for generating a plurality of discrete pulse coded control signals serving to identify individual subscribers which are authorized to unscramble the scrambled video and audio signals and to provide decoding pulses;

(d) means for transmitting the scrambled video and audio signals together with the control signals, said control signals being transmitted separately and simultaneously during transmission of each of the horizontal scan lines on a separate pre-selected frequency distinct from the video signals to determine whether or not the video portions of the next successive horizontal scan lines is are to be inverted; and

(2) receiving means comprising:

(a) means for receiving the transmitted scrambled video and audio signals together with the control signals;

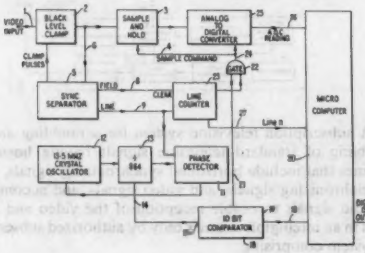
(b) means for storing a unique subscriber identity code;
(c) means for comparing each of the discrete pulse coded control signals with the stored identity code
(d) unscrambling means converting said control signals into decoding pulse and responsive to said comparing means when there is a code match for unscrambling of the video and audio signals by means of said decoding pulse in the same sequence as used for scrambling to provide restored video and audio signals without degradation in picture and sound qualities; and
(3) controlling means responsive to said plurality of control signals for continuously enabling each of the individual unscrambling means at a particular subscriber's receiving means on a selective basis so that if the comparing means fails to produce a code match for an individual subscriber identity code before a pre-selected time interval has elapsed the unscrambling means is automatically disabled.

4,215,367

TELEVISION SYSTEMS

Jeffrey Schaffer, London, and John E. Moore, Harrow, both of England, assignors to Independent Broadcasting Authority, London, England

Filed Oct. 28, 1975, Ser. No. 626,453
Claims priority, application United Kingdom, Nov. 1, 1974, 47330/74
Int. Cl.[2] H04N 7/02
U.S. Cl. 358—139 **9 Claims**



1. Apparatus for deriving a television quality parameter from an insertion test signal line inserted into a television signal which is repeated at regular intervals during field blanking periods of the television signal, said apparatus comprising means for receiving a test signal line inserted into a television signal; a sampling system which, when actuated, provides a digital amplitude signal representing the instantaneous amplitude at a sampling position of the received test line, controllable actuating means for actuating the sampling system and a computer having means for

(a) calculating the quality parameter from a plurality of digital amplitude signals, corresponding with instantaneous amplitudes at different sampling positions on the test line, and provided by the sampling system,
(b) providing the calculated quality parameter as output, and
(c) responding to timing origins carried by the television signal and control the actuating means at times, so related to the timing origins that the signals of said plurality of signals are provided in turn, at a low average rate,

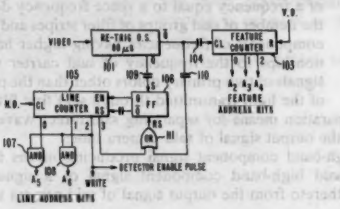
and means for providing a readout of said derived television quality parameter.

4,215,368

MEMORY ADDRESSING SYSTEM FOR AUTOMATIC SETUP TV CAMERA SYSTEM

Robert E. Flory, Princeton, and Mark R. Nelson, Stratford, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 15, 1979, Ser. No. 20,851
Int. Cl.[2] H04N 7/02, 5/14
U.S. Cl. 358—139 **6 Claims**



1. In an automatic setup unit for a television camera providing video signals when viewing a test pattern having features thereon, said unit including a digital memory for storing data indicative of measured values of the camera video according to memory addresses, a system for generating these memory addresses, comprising:

means for detecting signal features for providing feature detection signals,
means responsive to camera sync signals for providing first gating signals and first binary address signals indicative of a first horizontal width portion of the television raster and a second gating signal and a second binary address signal indicative of a second horizontal width portion of the television raster,
means responsive to said first gating signal and said feature detection signals for generating third binary address signals corresponding to the order of the features detected in said first width portion of the television raster,
means responsive to said second gating signal and said feature detection signals for generating fourth binary address signals corresponding to the order of the features detected in said second width portion of the television raster, and
means responsive to said first and second gating signals and said binary addresses for applying to said memory said first and third binary address signals during said first gating signal and for applying to said memory said second and fourth binary address signals during said second gating signals.

4,215,369

DIGITAL TRANSMISSION SYSTEM FOR TELEVISION VIDEO SIGNALS

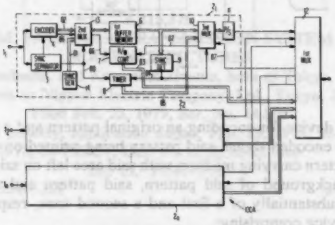
Yukihiko Iijima, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Dec. 15, 1978, Ser. No. 970,051
Claims priority, application Japan, Dec. 20, 1977, 52-153920; Dec. 20, 1977, 52-153932; Mar. 28, 1978, 53-36335
Int. Cl.[2] H04N 7/08
U.S. Cl. 358—146 **11 Claims**

1. In a digital transmission system for television video signals, which comprises a transmitter and a receiver, said transmitter comprising a plurality of input terminals for receiving respective television video signals to be transmitted, a plurality of encoding units for encoding said respective television video signals into digitized video signals, and a multiplexer for multiplexing said respective digitized video signals in a time division manner; and said receiver comprising a demultiplexer for receiving the multiplexed video signal transmitted from said multiplexer and for separating the same into said digitized video signals, and a plurality of decoding units for decoding said respective digitized video signals given from said demulti-

plexer into said respective television video signals, the improvement wherein:

each of said encoding units comprises a synchronization pulse separator for separating synchronization pulses in said television video signal, an encoder responsive to the separated synchronization pulses for encoding said television video signal into predetermined codes, a generator for generating video-frame-synchronization codes each indicative of the end of one picture frame of said television video signal, first means for multiplexing said video-frame-synchronization codes and the encoded codes of said encoder, a first buffer memory for temporarily storing the multiplexed codes given from said first means, a first read/write controller for supplying write-in and read-out address signals to said first buffer memory and for measuring a buffer-occupancy state of said first buffer memory to produce a buffer-occupancy code, second means for measuring a time interval from a time point when said video-frame-synchronization code is written into said first buffer memory to a time point when read out from the first buffer memory and for producing a first time-indicating code



representative of said time interval, and third means for multiplexing the codes read out from said first buffer memory and said first time-indicating code and for supplying the output therefrom to said multiplexer; and

each of said decoding units comprises a second buffer memory for temporarily storing said digitized video signal supplied from a corresponding encoding unit, a second read/write controller for producing write-in address signals for writing said multiplexed codes and said time-indicating code into said second buffer memory and for producing read-out address signals for reading out the codes stored in said second buffer memory, fourth means for detecting said first time-indicating code in said digitized video signal, fifth means for measuring a time interval from a time point when said video-frame-synchronization code is written into said second buffer memory to a time point when read out of the second buffer memory and for producing a second time-indicating code, and a buffer memory controller for comparing said first and said second time-indicating codes and for controlling said read-out address signals based on the comparison operation.

4,215,370

SATELLITE VIDEO MULTIPLEXING COMMUNICATIONS SYSTEM

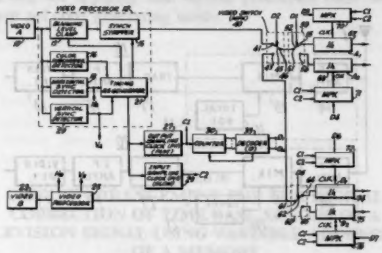
Donald Kirk, Jr., St. Petersburg, Fla., assignor to Digital Communications, Inc., St. Petersburg, Fla.

Filed Feb. 22, 1978, Ser. No. 879,861

Int. Cl.[2] H04N *7/08*

U.S. Cl. 358—146 **26 Claims**

1. In combination in a video transmission system for communicating two video programs via a single communications channel, a transmitter including means for supplying first and second television signals each including successive lines of video information separated by horizontal synchronizing pulse periods, first and second storage means for storing successive lines of said first television signal, third and fourth storage means for storing successive lines of said second television signal, first demultiplexing means for loading said first and second television signals into said first and second, and said third and fourth storage means therefor, respectively, means for generating a digital synchronizing word, and first multi-



plexing means for cyclically supplying said synchronizing word, one line of said first television signal read out from an alternating one of said first and second storage means, and one line of said second television signal read out from an alternating one of said third and fourth storage means.

4,215,371

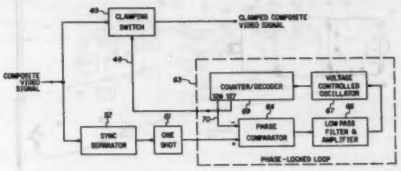
FRONT PORCH CLAMPING CIRCUIT

Richard S. Baggett, Plano, and Carl E. Bumpas, Richardson, both of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 21, 1978, Ser. No. 972,180

Int. Cl.[2] H04N *5/18*

U.S. Cl. 358—172 **6 Claims**



1. A circuit for establishing a reference level in a video signal having repetitive features including a sync tip characterized by the signal assuming a first level, a front porch wherein the signal assumes a second level just preceding the sync tip, and a leading edge connecting the front porch and sync tip, the occurrence of said sync tip outside of a vertical blanking interval establishing a horizontal line period and rate, said circuit comprising:

means, responsive to said video signal, for synchronizing with a period of time in said front porch before the leading edge of the sync tip, and

means, actuated by the synchronizing means, for clamping said video signal to a selected level during said period of time.

4,215,372

TELEVISION SIGNAL INTERFERENCE ELIMINATION CIRCUIT INCLUDING A TRAP CIRCUIT

Sadao Suzuki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 15, 1978, Ser. No. 942,693

Claims priority, application Japan, Sep. 28, 1977, 52-130253[U]

Int. Cl.[2] H04B *1/16*; H04N *5/44*

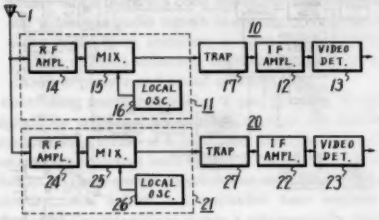
U.S. Cl. 358—188 **12 Claims**

1. Television signal processing circuit for connection to an antenna comprising:

(a) an RF tuner having an IF output and an RF input for connection to said antenna.

(b) an IF amplifier coupled to the output of said RF tuner, and

(c) a frequency responsive trap connected to a signal path of



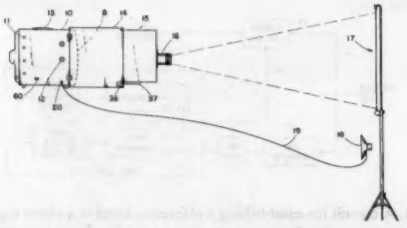
said IF amplifier for rejecting an undesirable signal applied from a local oscillator of another tuner connected to said antenna and having a frequency in the vicinity of an IF signal so as to prevent a beat signal from being caused by mutual interference between said IF signal and said undesirable signal.

4,215,373

TELEVISION SET PROJECTOR

Max Goldenberg, and David A. Goldenberg, both of 1215 S. Fairlawn Ave., Evansville, Ind. 47714

Filed Oct. 19, 1978, Ser. No. 952,688
Int. Cl.[2] H04N 5/74
U.S. Cl. 358—237 **8 Claims**



1. A device for projecting and magnifying a picture image from a screen of a television set comprising:

a light-storage housing removably mountable to said television set, said housing having a proximal end portion extending continuously and peripherally around said screen to receive all light rays emitted by said screen and defining a first tunnel extending outwardly from said screen in a straight direction;

a light-reflecting housing having a distal end portion and an inner end portion with said inner end portion slidably mounted to said storage housing and being aligned therewith, said reflecting housing defining a second tunnel extending in the same direction as said first tunnel with said first tunnel and said second tunnel cooperatively forming an obstruction-free passage for light rays emitted from said screen in said straight direction;

first means provided on said reflecting housing at said distal end portion and extending across said passage having an aperture to receive a lens and operable to allow a portion of light rays from said screen to pass through said aperture; and

an image lens mounted on said means at said aperture to magnify and project light rays pasing therethrough from said screen upon a forward viewing surface facing said lens and located remotely from said television set;

said storage housing includes a light-absorbent inner surface extending around said first tunnel to absorb at least a portion of light rays emitted from said screen in a direction other than said straight direction;

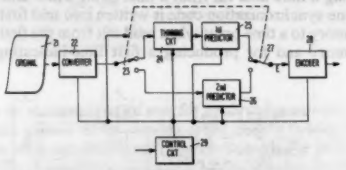
said reflecting housing includes a light-reflective inner surface extending around said second tunnel to reflect light rays through said lens.

4,215,374

ENCODING DEVICE COMPRISING PREDICTORS FOR THINNED AND UNTHINNED PATTERNS

Shoji Mizuno, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Mar. 1, 1979, Ser. No. 16,635
Claims priority, application Japan, Mar. 2, 1978, 53-24095
Int. Cl.[2] H04N 7/12
U.S. Cl. 358—260 **4 Claims**



1. A device for encoding an original pattern and a first area into an encoded signal, said pattern being printed on a surface of a pattern carrying medium with said area left on said surface as a background of said pattern, said pattern and said area being substantially of a first and a second tone, respectively, said device comprising:

sampling means for scanning said surface substantially along rectilinear and parallel scanning lines in succession and for sampling at predetermined sampling instants sequential picture elements along the respective scanning lines from said pattern and said area to produce substantially at the respective sampling instants successive sample pulses representative of the picture elements of said pattern and said area with a first and a second level, respectively;

thinning means responsive to said sample pulses for carrying out, in effect, thinning of said original pattern into a thinned pattern having less picture elements than said original pattern and thereby widening of said first area into a second area having accordingly increased picture elements as compared with said first area to produce substantially at the respective sampling instants successive pre-processed pulses representative of the picture elements of said thinned pattern and said second area with a third and a fourth level, respectively;

first predicting means responsive to a first reference set of picture elements for predicting, in effect, a first predicted picture element for a first actual picture element in accordance with a first prediction rule to produce a first prediction error pulse representative of an error between said predicted and said actual picture elements, said actual picture element being represented by the pre-processed pulse produced by said thinning means at each of said sampling instants, the picture elements of said reference set being represented by the pre-processed pulses produced by said thinning means at those of said sampling instants which are selected therefrom according to a first predetermined rule and include the sampling instant next preceding said each sampling instant, said first predicting means thereby producing a sequence of first prediction error pulses as at least a portion of an output signal thereof;

second predicting means responsive to a second reference set of picture elements for predicting, in effect, a second predicted picture element for a second actual picture element in compliance with a second prediction rule, different from said first prediction rule, to produce a

second prediction error pulse representative of an error between said second predicted and actual picture elements, said second actual picture element being represented by the sample pulse produced by said sampling means at each of said sampling instants, the picture elements of said second reference set being represented by the sample pulses produced by said sampling means at those of said sampling instants which are selected therefrom complying with a second predetermined rule and include the sampling instant next previous to the sampling instant at which the sample pulse representative of said second actual picture element is produced, said second predicting means thereby producing a sequence of second prediction error pulses as at least a portion of an output signal thereof;

selecting means for selecting one of said first and said second predicting means to produce a selection code indicative of the selected predicting means; and

encoding means for encoding the output signal of said selected predicting means into said encoded signal with said selection code placed therein.

4,215,375

DIGITAL FACSIMILE TRANSMISSION SYSTEM FOR SCREENED PICTURES

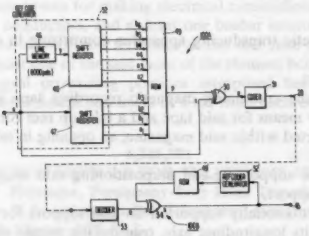
Tourn Usubuchi, and Kazumoto Iinuma, both of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Feb. 23, 1979, Ser. No. 14,508

Claims priority, application Japan, Feb. 23, 1978, 53-20457; Sep. 19, 1978, 53-115357; Oct. 17, 1978, 53-127485

Int. Cl.[2] H04N *1/00*

U.S. Cl. 358—261 **6 Claims**



1. A digital facsimile system adapted to transmit picture signals representative of newspapar pages and the like having a printed character portion and a screened picture portion, said system having a transmitter and a receiver, wherein said transmitter comprises: an input terminal for receiving a digitized facsimile signal in the form of a train of pel codes formed by scanning a picture to be transmitted including black and white pels and digitizing the output of said picture scanning; a first reference code generator including first means for providing from the present pel code first pel codes contiguous to said present pel code, second means for providing a second pel code spaced by the pitch of said screened picture from said present pel code, and third means for providing third pel codes near said second pel code, said first reference code generator producing a first reference code including said first to third pel codes; means for producing a first prediction code for said present pel code on the basis of said first reference code; fourth means for providing a prediction error code from said first prediction code and said present pel code; and means for run-length coding the prediction error signal consisting of a plurality of said first prediction error codes successively delivered from said fourth means; and wherein said receiver comprises: means for decoding the coded signal transmitted from said transmitter to reproduce said prediction error signal; means responsive to the output of said decoding means for producing said present pel code from said each prediction error code of said prediction error signal; means responsive to the output of said present code generating means for producing a second reference code corresponding to said first reference code; and means responsive to said second reference code for producing a second prediction code corresponding to said first prediction code and for applying said second prediction code to said present pel code generating means.

4,215,376

CIRCUIT ARRANGEMENT FOR THE DIGITAL CORRECTION OF TIME BASE ERRORS OF A TELEVISION SIGNAL USING VARIABLE ADDRESSING OF A MEMORY

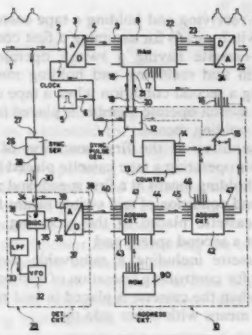
Helmut Mach, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 30, 1978, Ser. No. 873,733

Claims priority, application Austria, Feb. 22, 1977, 1171/77

Int. Cl.[2] H04N *5/04*

U.S. Cl. 360—36 **5 Claims**

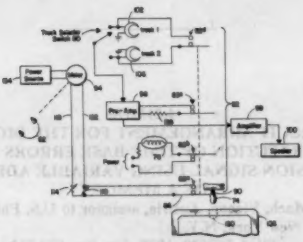


1. A circuit arrangement for the digital correction of time base errors of a television signal, said circuit comprising an analog to digital converter for converting said television signal into digital television signals with a specific clock frequency, a random access memory device with a given number of addresses coupled to said converter, a digital to analog converter coupled to said memory for reconverting said digital signals into an analog television signal, an address circuit coupled to the memory device for writing the digital television signals into the addresses of the memory device with the clock frequency and for reading at times in between the times of said writing the memory device addresses with the clock frequency, the addresses that are read being selected in accordance with the magnitude and sign of the time base error; an identification circuit for determining the time base error comprising a phase discriminator to which a comparison signal derived from the television signal is applied, said comparison signal being compared with a desired signal; said identification circuit having output means for supplying digital time base error output signals which occur at a given time interval, the ratio of the time interval which is defined by the clock frequency to the given time interval for the formation of the digital time base error signals being an integer, said output means being coupled to the address circuit for controlling the selection of the memory device addresses to be read depending on the number of time intervals contained in the digital time base error signals and defined by the clock frequency with respect to the number of memory device addresses.

4,215,377
MULTI-SPEED TAPE CASSETTE SYSTEM

Elwood G. Norris, 1520 Canterbury Dr., Salt Lake City, Utah 84108

Filed Oct. 10, 1978, Ser. No. 949,752
Int. Cl.[2] G11B *15/46, 15/00*
U.S. Cl. 360—73 10 Claims

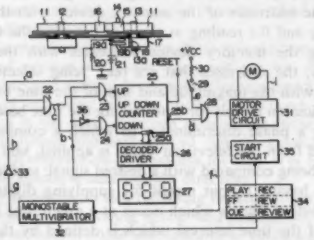


1. A multi-speed tape cassette system comprising
a tape player operable to play back information contained on a tape cassette at least at two speeds, said tape player including
means for receiving and holding a tape cassette;
control switch means for assuming a first condition when a tape cassette having a switch operate member is placed in said receiving and holding means, and for assuming a second condition when a tape cassette lacking said switch operate member is placed in said receiving and holding means,
means responsive to the first condition of said switch means for operating a tape cassette placed in the receiving and holding means at a first speed, and responsive to the second condition of said switch means for operating a tape cassette placed in the receiving and holding means at a second speed, and
a tape cassette including a removable switch operate member for controlling operation of said control switch means when the cassette is placed in said receiving and holding means with either side up.

4,215,378
AUTOMATIC STOP DEVICE FOR A TAPE RECORDER

Masanobu Sato, and Kenzi Furuta, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 8, 1978, Ser. No. 958,620
Claims priority, application Japan, Nov. 25, 1977, 52-141320
Int. Cl.[2] G11B *15/48*
U.S. Cl. 360—74.1 6 Claims

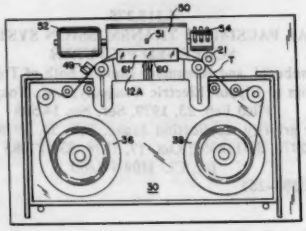


1. An automatic tape recorder-stopping device which comprises a motor for driving a tape reel, a motor drive circuit for driving the motor, first signal-generating means for issuing a pulse signal at a frequency proportional to the rotation number of a tape reel, second signal-producing means for detecting the normal and backward rotations of the tape reel and issuing the normal and backward rotation signals, a counter circuit which counts up and down in response to one of said normal and backward rotation signals from said second signal-producing means which denotes the normal and backward rotations of the tape reel, carries out addition or subtraction in synchronization with the pulse signal from the first signal-generating means, and sends forth an output signal in accordance with the counted contents, means for deenergizing the motor drive circuit in response to the output signal from the counter circuit, and holding means connected to the counter circuit for sustaining the contents of the counter circuit in response to the output signal therefrom.

4,215,379
CARTRIDGE MAGNETIC RECORDER

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Filed Dec. 15, 1977, Ser. No. 860,685
Int. Cl.[2] G11B *15/66*
U.S. Cl. 360—85 9 Claims



1. Magnetic transducing apparatus comprising in combination:
a support,
a magazine containing magnetic recording tape including supply means for said tape and a take-up reel rotationally supported within said magazine, an opening in said magazine,
means for supporting and prepositioning said magazine on said support,
a drum rotationally supported on said support for rotation about its longitudinal axis, transducing means supported by said drum for rotation therewith,
a motor supported by said support and operatively connected to said drum for rotating said drum at constant speed,
first tape manipulation means supported by said support and operable to engage a portion of the tape in said magazine and to withdraw a loop formation thereof through said opening and out of said magazine and to dispose said tape between said magazine and said drum with the longitudinal axis of said tape extending parallel to the longitudinal axis of said drum,
second tape manipulation means, means for moving said second tape manipulation means into engagement with said portion of said tape disposed between said drum and said magazine by said first tape manipulation means to cause said tape to conform to a portion of the length of said drum whereby, when said drum is rotated by said motor, the transducing means supported by said drum will transversely scan said tape,
tape drive means supported adjacent the portion of said tape drawn from said magazine and operable to drive said tape longitudinally along said drum as said drum rotates and therefrom into said magazine,
means supported by said support for operating said takeup means to take up the tape driven into said magazine by said tape drive means whereby tape may be constantly driven towards and away from said drum so that the

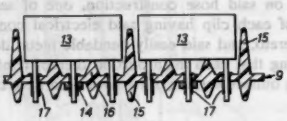
transducing means supported by said drum transversely scans said tape as said tape in driven longitudinally along the surface of said drum.

4,215,380

CARRIERS FOR MOUNTING LIGHTNING PROTECTORS

Alan W. Massey, Radlett, England, assignor to Post Office, London, England

Filed Aug. 30, 1977, Ser. No. 830,018
Claims priority, application United Kingdom, Sep. 1, 1976, 36183/76
Int. Cl.[2] H02H 3/22
U.S. Cl. 361—119 18 Claims



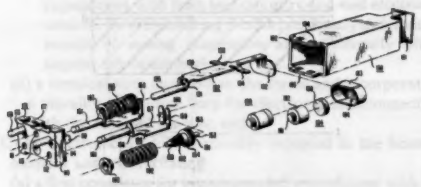
1. A lightning protector carrier comprising a lamellar element made of electrically-insulating material and having a plurality of sets of holes extending directly therethrough from a front face to a rear face of the element, a respective set of electrically-conducting terminals for each of said sets of holes, each terminal being accommodated in a respective one of the holes and extending therethrough from the front face to the rear face of the element whereby each set of terminals provides, at the front face of the element, a socket to receive a respective lightning protector device and, at the rear face of the element, means for making electrical connections from the socket to conductors, and at least one busbar interconnecting preselected ones of said terminals at the rear face of the element, at least one of the said faces of the element being formed with integral protruding portions interposed between said holes to separate the terminals of a set from each other.

4,215,381

PROTECTOR MODULE FOR TELEPHONE CIRCUITS

Robert F. Heisinger, Parsippany-Troy Hills Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 25, 1978, Ser. No. 945,445
Int. Cl.[2] H02H 9/02, 7/20
U.S. Cl. 361—124 6 Claims



1. An electrical protector assembly for protecting a circuit against excessive voltages and excessive currents including:

an insulative base subassembly;

a ground plate subassembly slidably coupled to said base subassembly;

a heat coil subassembly for sensing said excessive currents, this subassembly including a spool having a first conductive flange on one end, windings of resistance wire about an outer surface, and a pin affixed to an inner surface by a thin coating of solder; and

means, axially aligned with said heat coil subassembly, for conducting said excessive voltages from said heat coil subassembly pin to said ground plate subassembly characterized in that said heat coil subassembly further includes a second conductive flange spaced apart and isolated from said first flange by an insulative member, one end of said resistance wire windings being connected to said spool and an opposite end of said resistance wire windings being connected to said second flange; and

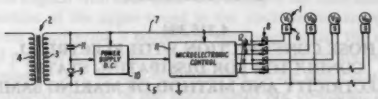
means, surrounding a portion of said heat coil subassembly and in contact with said second flange, for urging said heat coil subassembly first flange from a first position spaced apart from said ground plate subassembly to a second position in contact with said ground plate subassembly upon passage of said excessive currents through said resistance wire windings.

4,215,382

GROUNDING ARRANGEMENT FOR MICROELECTRONIC SPRINKLER CONTROL

Wayne E. Davis, Fresno, Calif., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Jun. 15, 1978, Ser. No. 915,845
Int. Cl.[2] H01H 43/00
U.S. Cl. 361—166 8 Claims



1. In a sprinkler system having a plurality of normally closed sprinkler valves, a solenoid for operating each sprinkler valve and an a-c power source to energize the solenoids, the improved circuit for operating the solenoids for the sprinkler valves in predetermined timed sequence comprising

an earth-grounded power line connecting one side of the a-c power source to each solenoid;

a non-grounded power line connecting the other side of the a-c power source to each solenoid;

switch means for each solenoid in at least one of said earth-grounded and non-grounded power lines for selectively energizing said solenoid;

rectifier means for rectifying a portion of the output of the a-c power source; and

microelectronic control means supplied with power from the rectifier means and connecting as a voltage reference only the non-grounded power line for operating each switch means in predetermined timed sequence.

4,215,383

CURRENT REGULATOR FOR DC MOTORS INCLUDING SENSITIVITY CONTROL MEANS THEREFOR

Robert L. Boyd, Woodcliff Lake, and Joseph W. Fleming, Ramsey, both of N.J., assignors to Ramsey Controls, Inc., Rahway, N.J.

Filed Feb. 16, 1978, Ser. No. 878,621
Int. Cl.[2] H01H 47/04, 47/06
U.S. Cl. 361—210 1 Claim

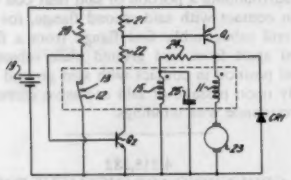
1. A device for current regulation, and sensitivity control means therefore, said device including a load through which the current to be regulated normally passes comprising:

(a) a normally open electro-magnetically actuated relay including an armature movable in response to a magnetic field generated by current flow through a load coil actuated by its proximity to said load in order to sense a predetermined current level therein;

(b) means for adjusting said predetermined current level, including a second coil, bias wound with respect to said load coil, to vary the current required to produce a magnetic field of sufficient strength to move the armature of the relay to a closed position, and a capacitor in parallel connection with said coil to provide an averaging of the

inductive motor current through said second coil and to obtain fine sensitivity control over armature actuation, said means electrically connected to said relay; and

(c) electronic switching means connected to said electromagnetically actuated relay, said switching means comprising means for closing said relay and thereby cutting off



the load current when said predetermined current level is sensed by said electro-magnetically actuated relay,

so that the load current will be restored when said current decays sufficiently to enable the armature of said electro-magnetically actuated relay to return to its normally open position.

4,215,384

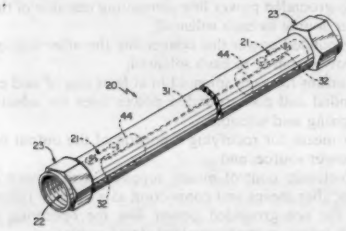
HOSE CONSTRUCTION WITH ELECTRICAL CONDUCTOR FOR DISSIPATING STATIC ELECTRICITY AND METHOD OF MAKING SAME

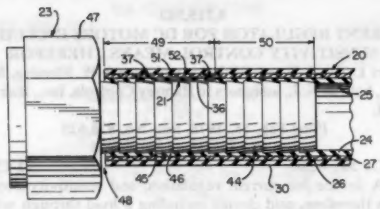
Arthur M. Elson, Budd Lake, N.J., assignor to Dayco Corporation, Dayton, Ohio

Filed Mar. 9, 1978, Ser. No. 884,793

Int. Cl.[2] F16L *11/12*; H05F *3/02*

U.S. Cl. 361—215 **3 Claims**





1. In a hose construction having an inside surface defining a passage for conveying a fluid under pressure and an electrical conductor disposed along the hose construction and having a pair of spaced terminal ends adapted to be placed in electrical communication with said passage for dissipating static electricity caused by fluid flow through said passage, a pair of hose connectors connected to opposed end portions of said hose construction with each hose connector having an undulating outside surface engaging said inside surface at an associated end portion of said hose construction, the improvement comprising a pair of electrically conductive metal clips with each clip being connected to an associated terminal end of said electrical conductor and having a portion thereof sandwiched between said inside surface and the outside surface of an associated hose connector to provide an electrical connection therebetween, each clip being made of a flat strip of an easily bendable metal with said portion thereof having an undulating configuration conforming to the outside surface of its associated hose connector, said portion of each clip being a main elongate portion having a central longitudinal axis disposed parallel to the longitudinal axis of said hose construction and each clip further comprising a pair of L-shaped end portions extending from opposite ends of said main portion, said main and L-shaped portions defining each clip as a single-piece structure, said L-shaped portions engaging and self holding each clip on said hose construction, one of said L-shaped portions of each clip having said electrical conductor connected thereto, and said easily bendable metal defining each clip assuring that each main portion thereof conforms to the undulating outside surface of its associated hose connector.

4,215,385

REGENERABLE ELECTRIC CAPACITOR

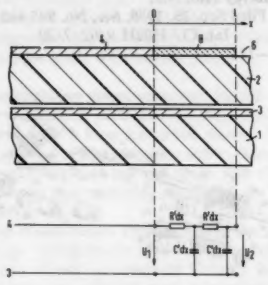
Reinhard Behn; Gerhard Hoyler, and Walter Voelkl, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 23, 1977, Ser. No. 863,794

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1977, 2703636

Int. Cl.[2] H01G *1/017*

U.S. Cl. 361—273 **1 Claim**



1. In a regenerable electric capacitor, in particular for a.c. voltage applications, of the type in which wound layers of synthetic foils carry metal coatings and capacitor plates and wherein metal-free edge strips are arranged on the longitudinal sides of the foils, the improvement wherein

said metal coatings comprise an alloy of aluminum and at least one metal whose oxide has a specific resistance

$$\rho < 10^9 \Omega cm,$$

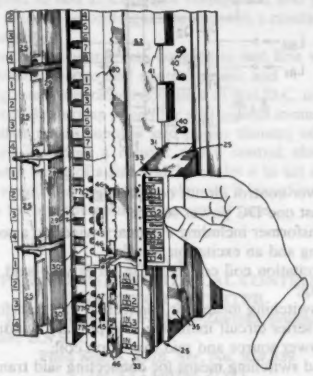
wherein said at least one metal is copper.

4,215,386

MODULAR PANEL CONSTRUCTION FOR PROGRAMMABLE CONTROLLER

Jay M. Prager, Hudson, N.H.; Joseph F. Sadlow, North Reading, Mass.; John E. Farrand, Nashua, N.H.; Thomas A. Boissevain, Bedford, and Roman Y. Gonzales, Andover, both of Mass., assignors to Modicon Division, Gould Inc., Andover, Mass.

Filed Mar. 3, 1978, Ser. No. 883,277
Int. Cl.[2] H05K 5/00
U.S. Cl. 361—394 20 Claims



1. An input/output assembly interconnected with a central processor to form a machine controller for receiving information from and providing operating instructions to external devices, comprising:

(A) an interconnecting support member incorporating means for communication with the central processor;

(B) at least one housing member incorporating

(a) a central frame supportingly mounted to the support member,

(b) electronic circuitry mounted to the frame and communicating with the communicating means of the support member,

(c) connector assemblies, electronically interconnecting said electronic circuitry to an electronic module, and

(1) being removably supportingly retained on the central frame in rigid, non-pivoting positions, and

(2) comprising a plurality of flexible, resiliently deformable pin members for solderless, removable electronic engagement with both said circuitry and said electronic module, thereby assuring flexible, resiliently deformable receipt of mating connectors at any laterally offset angular relationship thereto, and

(d) a terminal strip mounted to the frame and incorporating a plurality of contact lines for electronic interconnection with the external devices; and

(C) an electronic module removably mounted to the housing member and incorporating

(a) a first connector for interconnected engagement with the connector assembly in a plurality of laterally offset insertion angles, and

(b) a second connector for interconnected engagement with the contact lines of the terminal strip;

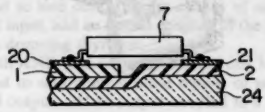
whereby, the electronic module is securely and easily mounted to the support frame of the housing member as well as electrically connected between the external devices and the central processor by simply engaging the first connector of the module with a connector assembly in any desired laterally offset insertion angle and then moving the module sideways for electronic engagement of the second connector with the terminal strip contacts.

4,215,387

MULTI-LAYER FLEXIBLE PRINTED CIRCUIT BOARD ASSEMBLY

Kiyoshi Negishi, Asaka, and Katsuhiko Miyata, Omiya, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1978, Ser. No. 946,916
Claims priority, application Japan, Oct. 6, 1977, 52-134538[U]
Int. Cl.[2] H02B 1/04
U.S. Cl. 361—398 5 Claims



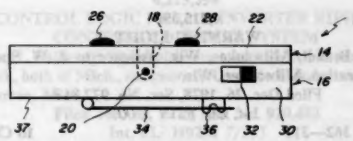
1. A multi-layer flexible printed circuit board assembly comprising: at least two substantially flat flexible printed circuit boards, each of said circuit boards having an electrically conductive layer secured to the top surface thereof; said boards being stacked on top of each other with the conductive layers aligned with each other and facing in the same direction; a portion of the upper board in the stack having an opening therein uncovering a portion of the lower board; the uncovered portion of the lower board being bent upwardly into said opening so that the conductive layers on the upper board and uncovered portion of the lower board are co-planar; and an electrical component having two leads, one of which is connected to the conductive layer on the upper board, and the other of which is connected to the conductive layer on the lower board so that the plane of the connected electrical component is parallel to the plane of the co-planar conductive layers.

4,215,388

NOVELTY BUTTON

Roman M. Reimann, 2717 Titus Ave., Rochester, N.Y. 14622

Filed Nov. 9, 1978, Ser. No. 959,347
Int. Cl.[2] F21L 15/08
U.S. Cl. 362—104 3 Claims



1. A novelty facial design button comprising:

(a) a printed circuit board having mounted thereon

(1) a light emitting diode flasher circuit comprising a LM 3909 linear integrated circuit manufactured by National Semiconductor Corporation and a capacitor,

(2) a 1.5 volt battery,

(3) a switch, said battery and said switch being connected to the input terminals of said integrated circuit, and

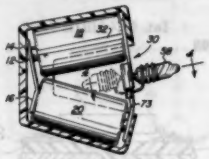
(4) at least first and second light-emitting diodes connected to the output terminals of said integrated circuit; and

(b) a housing enclosing said printed circuit board, said housing having means defining at least first and second apertures, therein, and a facial design on at least one external surface, said printed circuit board being arranged within said housing so that said first and second diodes extend through said first and second apertures, respectively, and form at least a portion of said facial design.

4,215,389
BATTERY OPERATED LIGHT

Fernando M. Colangelo, 1315 E. Camelback, Phoenix, Ariz. 85014

Filed Dec. 12, 1977, Ser. No. 859,791
Int. Cl.[2] F21L 7/00
U.S. Cl. 362—199 6 Claims

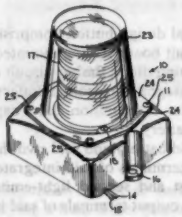


1. A flashlight for use with at least two battery cells each having terminals at opposite first and second ends comprising:
(a) a frame for securing the said batteries in a generally side-by-side relationship defining a space therebetween, said frame including a first conductive element extending between a first set of battery terminals at the first end of said batteries, second conductor means extending from one of the battery terminals at said second end into said space and third conductor means extending from the other of said battery terminals at said second end into said space;
(b) switch means having an outer conductive body section, said conductive body section forming an electrical connection with said second conductor means;
(c) bulb holder means having an arm and a bulb receiving portion for receiving the terminal portion of a bulb, said bulb holder means being in electrical contact with said third conductor, said bulb receiving portion being adjacent said switch member and being rotatable about said third conductor whereby said bulb holder means is rotative from a second position placing said bulb terminal portion out of contact with said conductive body section and generally positioned in the space between said batteries to a first energized position placing said bulb terminal portion in electrical contact with the conductive body section thereby completing an electrical circuit.

4,215,390
WARNING LIGHT

Ivan L. Brandt, Milwaukee, Wis., assignor to J. W. Speaker Corporation, Milwaukee, Wis.

Filed Dec. 26, 1978, Ser. No. 972,813
Int. Cl.[2] F21V 3/00
U.S. Cl. 362—311 10 Claims

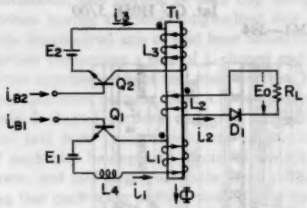


1. A lens especially adapted for increasing the effective light output of a flashing strobe light, said lens being formed of a plastic material which has incorporated therein an effective amount of a fluorescent material which converts the radiation emitted by the flashing strobe light to the wavelength of the fluorescent material.

4,215,391
POWER CONVERSION DEVICE

Kazuo Kameya, Tsurugashima, Japan, assignor to Toko Inc., Tokyo, Japan

Filed Jul. 21, 1978, Ser. No. 926,889
Claims priority, application Japan, Jul. 29, 1977, 52-91085
Int. Cl.[2] H02M 3/335
U.S. Cl. 363—25 10 Claims

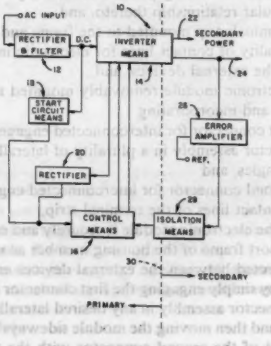


1. A power control circuit comprising:
(a) at least one DC power source;
(b) a transformer including a primary winding, a secondary winding and an excitation winding;
(c) an excitation coil connected in series with said primary winding;
(d) first switching means for connecting said transformer in a first series circuit including said primary winding, said DC power source and said excitation coil;
(e) second switching means for connecting said transformer in a second series circuit including said excitation winding and said DC power source;
(f) a rectifier circuit connected with driving a load; and
(g) said first and second switching means operative for alternately connecting said first and second series circuits wherein energy stored in said excitation winding during connection of said second series circuit induces a current in said secondary winding during connection of said first series circuit , said induced current superimposed on a current induced by said primary winding on said secondary winding during operation of said second series circuit, said superimposed current rectified by said rectifier circuit.

4,215,392
INVERTER POWER SUPPLY

Paul M. Rhoads, Orlando, Fla., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 19, 1978, Ser. No. 971,141
Int. Cl.[2] H02M 7/00
U.S. Cl. 363—49 6 Claims



1. A circuit comprising:

a transforming means having a primary and a secondary with said secondary having a first winding and at least one second winding, and also having means coupling said second winding to supply a D.C. output voltage to a load;

D.C. input means;

means operatively coupled to said D.C. input means for switching a current through said primary in response to first and second signals applied thereto to produce an alternating voltage across said first winding and said second winding;

control means having an input thereto which is operatively coupled to said D.C. output voltage and also generating said first and second signals to maintain a constant voltage at said load;

rectifier means operatively coupled to said first winding to provide power to said control means; and

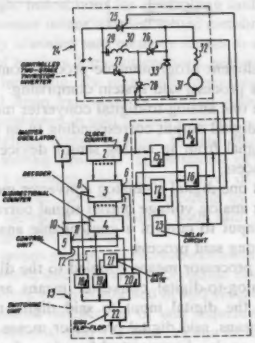
start-up means operatively coupled to said D.C. input means to provide start-up power for said control means until said rectifier means supplies said power thereto; said start-up means including a resistor and a control element, said resistor being of a size which enables it to act as a fuse in the event that said control element is biased into conduction for a predetermined amount of time.

4,215,393

APPARATUS FOR NUMERICAL CONTROL OF THYRISTOR INVERTER

Anatoly Y. Kalinichenko, Orekhovo-Zuevsky proezd, 6, kv. 16, Moscow, U.S.S.R.

Filed Sep. 5, 1978, Ser. No. 939,339
Int. Cl.[2] H02M 7/515
U.S. Cl. 363—124 **1 Claim**



1. An apparatus for numerical control of a thyristor inverter incorporating main, dropping, recharging and additional thyristors, comprising:

a master oscillator having an input and an output;

a clock counter having an input connected to the output of said master oscillator, a control pulse output and a group of outputs;

a bidirectional counter having a reset input, an add input, a subtract input and a group of outputs;

a decoder having groups of inputs respectively coupled to said groups of outputs of said bidirectional counter and of said clock counter, a control pulse output, a first regulation step switching pulse output, and a second regulation step switching pulse output;

a control unit having a reset output coupled to said reset input of said bidirectional counter and to the input of said master oscillator, an add output coupled to said add input of said bidirectional counter, and a subtract output coupled to said substract input of said bidirectional counter; and

a switching unit comprising first, second, third, fourth, fifth, sixth and seventh AND gates, a NOT gate, a sign flip-flop, and a delay circuit; wherein

said first AND gate of said switching unit has a first input coupled to said control pulse output of said clock counter, a second input, and an output coupled to gate electrodes of said main and recharging thyristors of said thyristor inverter;

said second AND gate of said switching unit has a first input coupled to said control pulse output of said clock counter, a second input, and an output coupled to a gate electrode of said dropping thyristor;

said third AND gate of said switching unit has a first input coupled to said control pulse output of said decoder, a second input, and an output coupled to the gate electrode of said dropping thyristor;

said fourth AND gate of said switching unit has a first input coupled to said control pulse output of said decoder, a second output, and an output coupled to a gate electrode of said additional thyristor;

said fifth AND gate of said switching unit has a first input coupled to said subtract output of said control unit, a second input coupled to said second regulation step switching pulse output of said decoder, and an output;

said sixth AND gate of said switching unit has a first input coupled to said add output of said control unit, a second input, and an output;

said seventh AND gate of said switching unit has a first input coupled to said add output of said control unit, a second input coupled to said first regulation step switching pulse output of said decoder, and an output;

said NOT gate of said switching unit has an input coupled to said first regulation switching pulse output of said decoder, and an output coupled to the second input of said sixth AND gate;

said sign flip-flop of said switching unit has a first input coupled to the outputs of said fifth and sixth AND gates, a second input coupled to the output of said seventh AND gate, a first output coupled to the second inputs of said second and fourth AND gates, and a second output coupled to the second inputs of said first and third AND gates; and

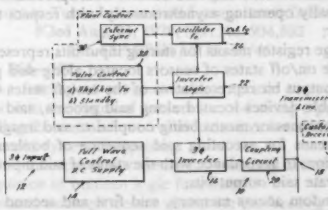
said delay circuit of said switching unit has an input coupled to the output of said fourth AND gate, and an output coupled to the gate electrode of said recharging thyristor.

4,215,394

CONTROL LOGIC FOR AN INVERTER RIPPLE CONTROLLED POWER SYSTEM

James H. Galloway, New Baltimore, and Alby M. Berman, Oak Park, both of Mich., assignors to Oxy Metal Industries Corp., Warren, Mich.

Filed Jun. 29, 1978, Ser. No. 920,482
Int. Cl.[2] H02M 7/515
U.S. Cl. 363—137 **14 Claims**



1. In a load management system for providing an audio frequency signal onto a three phase electrical line the improvement comprising: solid state inverter means actuable to one condition for providing a three phase signal from a d-c source and to another condition for not providing said three phase

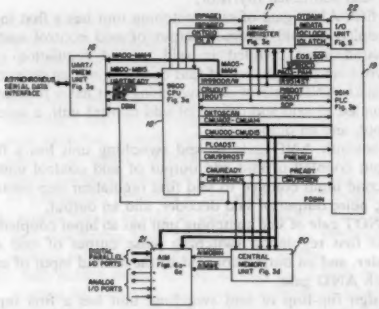
signal and comprising a plurality of unidirectional current controlled conduction solid state load devices, a three phase isolation transformer connecting said inverter means to the electrical line, control means including at least two of said controlled conduction solid state devices for providing a low impedance path for backfeed current from the electrical line during said another condition.

4,215,395

DUAL MICROPROCESSOR INTELLIGENT PROGRAMMABLE PROCESS CONTROL SYSTEM

Michael L. Bunyard, Lubbock, and Bobby G. Burkett, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 24, 1978, Ser. No. 936,533
Int. Cl.[2] G06F *15/16, 15/46*
U.S. Cl. 364—101 **36 Claims**



1. An intelligent programmable process control system for controlling a process, said system comprising:

(a) at least one analog-to-digital converter means for generating a digital output corresponding to an analog voltage input signal from an analog sensor device located along said process;

(b) at least one digital-to-analog converter means for generating an analog voltage output signal corresponding to a digital input to control a controllable analog device located along said process;

(c) first microprocessor means coupled to the digital output of said analog-to-digital converter means and coupled to provide the digital input to said digital-to-analog converter means, said first microprocessor means controlling at least one analog loop control function of said process via said analog-to-digital converter means and said digital-to-analog converter means;

(d) second microprocessor means for scanning and executing a sequence of boolean logic functions, said first microprocessor means and said second microprocessor means normally operating asynchronously with respect to each other;

(e) image register means for storing input bits representative of the on/off states of sensors located along said process and output bit representative of the on/off states of controllable devices located along said process, said second microprocessor means being coupled to said image register means for executing said sequence of boolean logic functions in accordance with the states of said input bits to generate said output bits;

(f) a random access memory, said first and second microprocessors being coupled to said random access memory to provide a first coupling therebetween to communicate with each other via selectively addressed memory locations of said random access memory; and

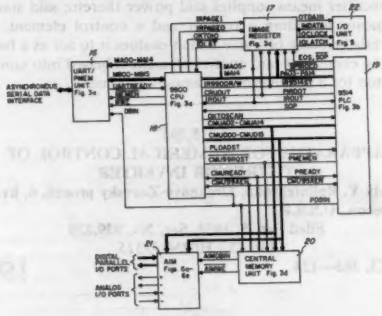
(g) other means coupling said second microprocessor to said first microprocessor whereby said second microprocessor signals said first microprocessor to perform digital operations and arithmetic computations for said second microprocessor in addition to controlling said analog loop control functions.

4,215,396

INTELLIGENT PROGRAMMABLE PROCESS CONTROL SYSTEM

Raymond W. Henry, Dallas; Bobby G. Burkett, Richardson, and Michael L. Bunyard, Lubbock, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 24, 1978, Ser. No. 936,538
Int. Cl.[2] G06F *15/16, 15/46*
U.S. Cl. 364—101 **6 Claims**



1. An intelligent programmable process control system for controlling a process, said system comprising:

(a) at least one analog-to-digital converter means for generating a digital output corresponding to an analog voltage input signal from an analog sensor device located along said process;

(b) at least one digital-to-analog converter means for generating an analog voltage output signal corresponding to a digital input to control a controllable analog device located along said process;

(c) digital processor means coupled to the digital output of said analog-to-digital converter means and coupled to provide the digital input to said digital-to-analog converter means, said digital processor means controlling at least one analog loop control function of said process via said analog-to-digital converter means and said digital-to-analog converter means;

(d) boolean processor means for scanning and executing a sequence of boolean logic functions;

(e) image register means for storing input bits representative of the on/of states of sensors located along said process and output bits representative of the on/off states of controllable devices located along said process, said boolean processor means being coupled to said image register means for executing said sequence of boolean logic functions in accordance with the states of said input bits to generate said output bits;

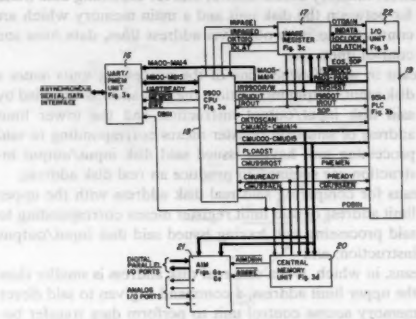
(f) selectively addressable memory means; and communication means including a direct path and a path through selectable addresses of said selectively addressable memory means coupling said digital processor means to said boolean processor means to communicate instructions and data between said digital processor means and said boolean means, said digital processor means and said boolean processor means normally operating independently and asynchronously with respect to each other.

4,215,397

AUTOMATIC END-OF-SCAN CONTROL SYSTEM FOR A PROGRAMMABLE PROCESS CONTROLLER WITH EXPANDABLE MEMORY

Gim P. Hom, Sharon, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 24, 1978, Ser. No. 936,547
Int. Cl.[2] G06F *15/16, 15/46*
U.S. Cl. 364—101 **10 Claims**



1. An intelligent programmable process control system responsive to the states of sensors located along the process for controlling the states of controllable devices located along said process, said system comprising:

(a) addressable memory means for storing a sequence of boolean logic instructions for controlling said process;

(b) microprocessor means coupled to said memory means for sequentially scanning said memory means to execute said sequence of boolean logic instructions, said microprocessor means including first means for generating an end-of-scan signal upon execution of the last instruction of a sequence contained in said memory means;

(c) image register means coupled to said microprocessor means for storing input bits representative of the states of said sensors and output bits representative of the states of said controllable devices as computed by said microprocessor means in accordance with said sequence of boolean logic instructions;

(d) receptor means adapted to receive extended addressable memory means, said extended addressable memory means being effective when positioned in said receptor means to store additional instructions of said sequence of boolean logic instructions, said receptor means including means for detecting the presence or absence of said extended addressable memory means in said receptor means and providing an indicator signal indicative thereof, and

(e) second means coupled to said receptor means and responsive to said indicator signal for generating an end-of-scan signal whenever said microprocessor means attempts to address said extended memory means and said indicator signal indicates that said receptor does not contain said extended memory means.

4,215,398

DUAL MICROPROCESSOR INTELLIGENT PROGRAMMABLE PROCESS CONTROL SYSTEM WITH COMMUNICATION LINK

Bobby G. Burkett, Richardson, and Michael L. Bunyard, Lubbock, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 24, 1978, Ser. No. 936,422
Int. Cl.[2] G06F *15/46, 15/16*
U.S. Cl. 364—101 **34 Claims**

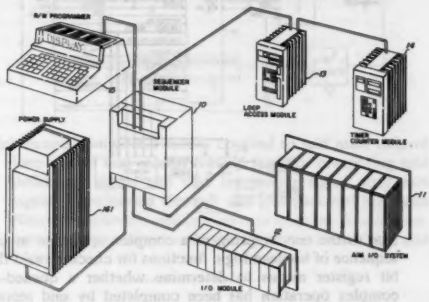
1. An intelligent programmable process control system responsive to the on/off states of sensors located along a process for controlling the on/off states of controllable devices located along said process comprising:

(a) a first microprocessor for performing digital operations and arithmetic computations;

(b) a second microprocessor for scanning and executing a sequence of boolean logic functions asynchronously with respect to the processing of said first microprocessor;

(c) a random access memory, said first and second microprocessor each being coupled to said random access memory to provide a first coupling therebetween to communicate with each other via selectively addressed memory locations of said random access memory;

(d) an image register for storing input bits representative of the on/off states of said sensors and output bits representative of the on/off states of said controllable devices, said



second microprocessor being coupled to said image register for executing said sequence of boolean logic functions in accordance with the states of said input bits to generate said output bits; and

(e) other means coupling said second microprocessor to said first microprocessor whereby said second microprocessor signals said first microprocessor to perform digital operations and arithmetic computations for said second microprocessor, the results of operations and computations for said second microprocessor being communicated to said second microprocessor via said random access memory and said second microprocessor generating output bits for controlling the on/off states of controllable devices along said process based upon the results of the operations and computations performed by said first microprocessor for said second microprocessor.

4,215,399

SPECIAL FUNCTION CONTROL SYSTEM FOR A DUAL MICROPROCESSOR PROGRAMMABLE PROCESS CONTROL SYSTEM

Mark J. Pavicic, and Jack L. Mahaffey, II, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 24, 1978, Ser. No. 936,532
Int. Cl.[2] G06F *15/16, 15/46*
U.S. Cl. 364—101 **26 Claims**

10. An intelligent programmable process control system responsive to the states of sensors located along a process for controlling the states of controllable devices located along said process, said system comprising:

(a) first microprocessor means for scanning and executing a sequence of boolean logic functions;

(b) second microprocessor means for performing relatively complex operations including arithmetic computations beyond the capabilities of said first microprocessor means, said first microprocessor means being coupled to an interrupt request input means of said second microprocessor means for transmitting interrupt requests to said second microprocessor means for execution of selection of said complex operations;

(c) addressable memory means, said first and second microprocessor means being coupled to said addressable memory means to communicate with each other via selectively addressed memory locations of said memory means; and

(d) flag bit register means settable by said second microprocessor means and detectable by said first microprocessor means for indicating to said first microprocessor means that a requested complex operation has been completed by said second microprocessor means, wherein;

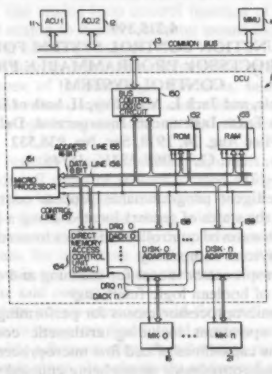
(e) said first microprocessor means includes means responsive to the encountering of a complex operation in said sequence of boolean logic functions for checking said flag bit register means to determine whether a queued-up complex operation has been completed by said second microprocessor means, said first microprocessor means continuing to scan and execute its sequence of boolean logic functions asynchronously with respect to the operation of said second microprocessor means until said flag bit register means indicates that execution of a requested complex operation has been completed by said second microprocessor means.

4,215,400

DISK ADDRESS CONTROLLER

Masatoshi Denko, Oume, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co. Ltd., Kawasaki, Japan

Filed Nov. 10, 1977, Ser. No. 850,146
Claims priority, application Japan, Nov. 17, 1976, 51-138174
Int. Cl.[2] G06F *13/04, 3/06, 7/38*
U.S. Cl. 364—200 **7 Claims**



1. A disk address controller being connected between a plurality of processing units, a main memory, and at least one disk unit being accessible by the plurality of processing units via a bus, and controlling the accesses of the processing units upon receipt of disk output instructions issued from the processing units said disk unit having a storing area including a plurality of accessible area portions allotted to said processing units, respectively, comprising:

base register means for storing the lower limit address of an accessible area portion allotted each processing unit to one disk unit;

limit register means for storing the upper limit address of said accessible area portion;

a direct memory access control unit for executing data transfer between the disk unit and a main memory which are connected to each other via address lines, data lines and control lines;

means in which, when one of the processing units issues a disk input/output instruction, the disk address specified by said disk input/output instruction and the lower limit address of said base register means corresponding to said processing unit having issued said disk input/output instruction are summed to produce an real disk address;

means for comparing said real disk address with the upper limit address of said limit register means corresponding to said processing unit having issued said disk input/output instruction; and

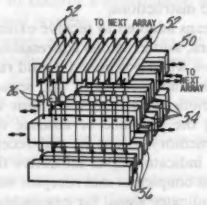
means, in which, when said real disk address is smaller than the upper limit address, a command is given to said direct memory access control unit to perform data transfer between the disk unit and said main memory using said real disk address, while, when said real disk address is larger than said upper limit address, an error interruption is made into said processing unit having issued said disk input/output instruction.

4,215,401

CELLULAR DIGITAL ARRAY PROCESSOR

Wlodzimierz Holsztynski, and Stephen S. Wilson, both of Ann Arbor, Mich., assignors to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Sep. 28, 1978, Ser. No. 946,588
Int. Cl.[2] G06F *7/00*
U.S. Cl. 364—200 **20 Claims**



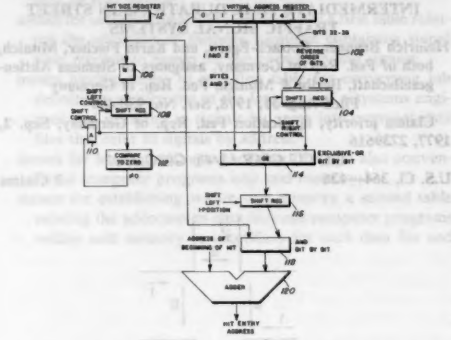
1. A rectangular digital processing array comprising: a plurality of processor cells each including a multi-bit memory having an input and an output, a first, input, single bit accumulator, a processing element having two inputs, one connected to receive the output of the multibit memory and the other connected to receive the output of the single bit accumulator; a second accumulator; first interconnections between the first accumulator of each cell and the first accumulators of two neighboring cells; second interconnections between the second accumulator of each cell and two neighboring cells which are different from the neighboring cells to which the first accumulator of each such cell is interconnected; and a controller connected to all of the cells in the array operative to control the transfer of data within each cell and through the interconnections between the cells.

4,215,402

HASH INDEX TABLE HASH GENERATOR APPARATUS

Glen R. Mitchell, Pine Island, and Merle E. Houdek, Rochester, both of Minn., assignors to International Business Machines Corporation, Rochester, Minn.

Filed Oct. 23, 1978, Ser. No. 953,675
Int. Cl.[2] G06F *9/20, 13/00*
U.S. Cl. 364—200 8 Claims



1. Apparatus for generating an entry address into a table from a virtual address in a data processing system, the data processing system having a main store, the virtual address having (1) a first group of bits for addressing within an object and (2) a second group of bits for addressing a particular object, where the size of the table is variable and is dependent upon the size of the main store, the main store having a plurality of objects, comprising:

first register means for storing a virtual address;

indicating means for indicating the number of entries in the table;

alignment means for aligning the first group of bits relative to the second group of bits based upon the number of entries in the table as indicated by said indicating means;

EXCLUSIVE-OR means connected to receive the first and second groups of bits after they have been aligned by said alignment means and operable to generate a result having a number of bits sufficient to represent the maximum number of entries in the table; and

bit eliminating means for eliminating bits from the result produced by said EXCLUSIVE-OR means based upon the number of entries in the table indicated by said indicating means.

4,215,403

ACTIVE SUSPENSIONS FOR VEHICLES

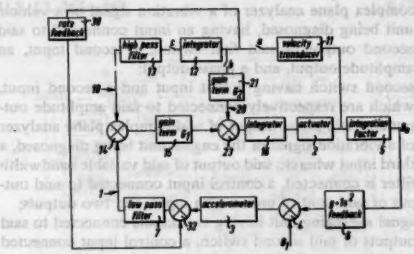
Maurice G. Pollard, and Roger M. Goodall, both of Derby, England, assignors to British Railways Board, London, England

Filed Aug. 23, 1978, Ser. No. 936,305
Claims priority, application United Kingdom, Oct. 25, 1977, 44274/77
Int. Cl.[2] B60G *25/00;* G05B *11/40*
U.S. Cl. 364—424 5 Claims

1. An active suspension system for a vehicle comprising:

(a) a main control loop including a suspension actuator, said loop including first comparator means for receiving an input signal representative of a suspension demand and a feed back signal representative of the response of said actuator to said demand, said input and feed back signals being compared in said first comparator means to provide a deficiency signal indicative of the deficiency between said demand and the response of said actuator, and a low-pass filter in said main control loop through which said deficiency signal passes, and

(b) a second control loop providing a restraining signal for restraining operation of said actuator, said second loop comprising means for deriving said restraining signal from a suspension parameter which varies with operation of said actuator, and a high pass filter in said second control loop through which said restraining signal is passed and which is substantially complementary to said low-pass filter, and



(c) second comparator means coupled to said main control loop and to said second control loop for comparing said deficiency signal and said restraining signal after said signals have passed through said low-pass and high-pass filters respectively, and operative in response to said comparison to provide a resultant signal for controlling said actuator.

4,215,404

AUTOMATIC DEVICE FOR DIAGNOSTIC CHECKUP OF VEHICLES

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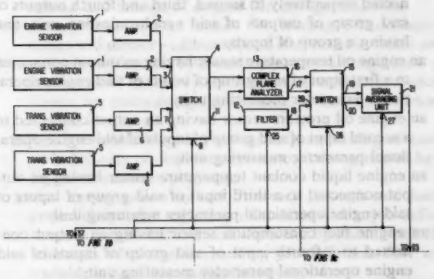
Filed Sep. 12, 1978, Ser. No. 941,593
Int. Cl.[2] G01M *15/00*
U.S. Cl. 364—431 3 Claims



1. An automatic device for diagnostic checkup of vehicles having an engine with at least one engine unit, the device comprising:

at least one vehicle engine vibration sensor, having an output;

at least one vehicle transmission vibration sensor, having an output;

a first switch having a first input electrically connected to said output of said engine vibration sensor, a second input electrically connected to said output of said transmission

vibration sensor, a control input and first and second outputs;

a computer;

a control unit having an input whereto a control signal is applied from said computer and an output, the output being connected to said control input of said first switch;

a variable bandwidth filter having an input connected to said first output of said first switch, a control input connected to said output of said control unit, and an output;

a complex plane analyzer of a vibration signal of a vehicle unit being diagnosed, having an input connected to said second output of said first switch, a second input, an amplitude output, and a phase output;

a second switch having a first input and a second input, which are respectively connected to said amplitude output and said phase output of said complex plane analyzer of a vibration signal of the engine unit being diagnosed, a third input whereto said output of said variable bandwidth filter is connected, a control input connected to said output of said control unit, a fifth input, and two outputs;

a signal averaging unit having two inputs connected to said outputs of said second switch, a control input connected to said output of said control unit, and from whose output a signal is applied to an input of said computer;

a synchronization unit having a control input connected to said output of said control unit, an output connected to said second input of said complex plane analyzer of a vibration signal, a group of inputs, and a group of outputs;

a vehicle engine shaft angular position sensor having an output connected to a first input of said group of inputs of said synchronization unit;

a transmission shaft angular position sensor having an output connected to a second input of said group of inputs of said synchronization unit;

at least one ignition sensor having an output connected to a fourth input of said group of inputs of said synchronization unit;

at least one sensor of fuel injection to vehicle engine cylinders, having an output connected to a fourth input of said goup of inputs of said synchronization unit;

a first output of said group of outputs of said synchronization unit being connected to said second input of said complex plane analyzer, to said fifth input of said second switch and wherefrom a signal is also applied to said computer;

an engine operational parameter measuring unit having an output signal applied to said computer, having an input connected to said output of said control unit, a second input, a third input and a fourth input, which are connected respectively to second, third and fourth outputs of said group of outputs of said synchronization unit, and having a group of inputs;

an engine oil temperature sensor having an output connected to a first input of said group of inputs of said engine operational parameter measuring unit;

an engine oil pressure sensor having an output connected to a second input of said group of inputs of said engine operational parameter measuring unit;

an engine liquid coolant temperature sensor having an output connected to a third input of said group of inputs of said engine operational parameter measuring unit;

an engine fuel consumption sensor having an output connected to a fourth input of said group of inputs of said engine operational parameter measuring unit;

at least one engine combustion chamber gas pressure sensor having an output connected to a fifth input of said group of inputs of said engine operational parameter measuring unit;

a spark plug voltage shape sensor having an output connected to a sixth input of said group of inputs of said engine operational parameter measuring unit;

an engine shaft rotational frequency adjustment unit having a control input connected to said output of said control unit, an information input connected to said fourth output of said group of outputs of said synchronization unit, and an output; and

an actuator for controlling fuel supply to engine cylinders, having an input connected to said output of said engine shaft rotational frequency adjustment unit.

4,215,405

METHOD AND APPARATUS FOR SECURING THE INTERMEDIATE TIME DURATIONS IN STREET TRAFFIC SIGNAL SYSTEMS

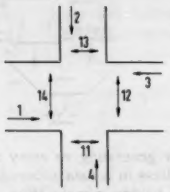
Heinrich Brunner, Rottach-Egern, and Karin Fischer, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 31, 1978, Ser. No. 938,409

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1977, 2739616

Int. Cl.[2] **G06F** *15/48;* **G08G** *1/07*

U.S. Cl. 364—436 **3 Claims**



1. A method for securing the intermediate protective time periods at an intersection in a street traffic signal system to provide adequate safety protection between respective traffic flows, comprising the following steps:

(a) with the end of the duration of the green light time period of each individual signal of the respective traffic flows to be independently controlled, adding the time elapsing thereafter, representing an actual time value,

(b) comparing such actual time value with predetermined theoretical protective time values for traffic flows antagonistic to the green light signal to be connected, and upon attaining and/or exceeding the predetermined values, releasing an associating connect command to said lastmentioned green light signal,

(c) adding, at interrogation intervals somewhat smaller than those corresponding to the time rhythm of the traffic signal, all of said theoretical time values employed in (b), with the total thereof thus constituting an additional actual total time value, and comparing the latter with a predetermined theoretical total time value therefor, and in the event an error is ascertained by said comparing operations, effecting corresponding safety precautions.

4,215,406

DIGITAL COMPUTER MONITORED AND/OR OPERATED SYSTEM OR PROCESS WHICH IS STRUCTURED FOR OPERATION WITH AN IMPROVED AUTOMATIC PROGRAMMING PROCESS AND SYSTEM

John W. Gomola; Theodore C. Giras; William G. Wood; Richard E. Putman; Rodney E. Gilbreath, all of Pittsburgh, Pa.; John S. Deliyannides, Wilmington, Del.; Terry B. Cullen, Pittsburgh, Pa.; F. David Jones, Pittsburgh, Pa.; Warren A. Edblad, Pittsburgh, Pa., and Frank E. Wallace, Irwin, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 22, 1972, Ser. No. 281,472

Int. Cl.[2] **B21B** *37/00*

U.S. Cl. 364—468 **8 Claims**

7. An automated system in which the execution of system operations is carried out under the joint control of computer programs and job definitions written out in the language of a

systems engineer and containing references to system signals by name, said system comprising:

means for implementing system operations;

sensor means for generating signals indicative of the state of the system;

a memory containing a plurality of addressable storage locations;

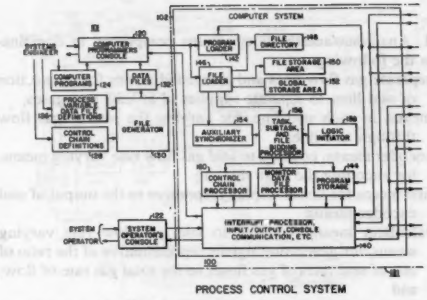
means for maintaining within said memory a record of the state of said signals;

means for establishing within said memory a first table relating the addresses of memory locations containing signal state records to names for the corresponding signals;

means having access to said first table for converting job definitions written out in the language of a systems engineer and referring to signals by name into compact data files that refer to signals by address;

means for loading said compact data files and also conventional computer programs into said memory;

means for establishing within said memory a second table relating the addresses of data files and computer programs within said memory to identifiers for each data file and



program, and also distinguishing data file addresses from program addresses;

first means for interpreting and carrying out system operations called for by a data file when supplied with the data file address;

second means for executing a computer program when supplied with the computer program address;

means for initiating the execution or interpretation of any data file or computer program when supplied with an identifier of the data file or program, said means including

means having access to said second table for determining whether a supplied identifier corresponds to a data file or to a computer program,

means for obtaining from said table the address of the data file or program corresponding to a supplied identifier, and

means for supplying said address to said first means in the case of a data file and to said second means in the case of a computer program; and

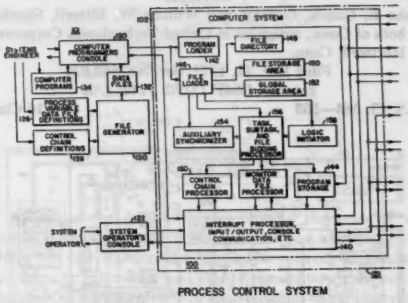
means associated with both said first and second means for transferring an identifier from any computer program or data file to said means for initiating.

4,215,407

COMBINED FILE AND DIRECTORY SYSTEM FOR A PROCESS CONTROL DIGITAL COMPUTER SYSTEM

John W. Gomols; William G. Wood; F. David Jones, all of Pittsburgh; Frank E. Wallace, Irwin, and Ross T. Marano, Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 22, 1972, Ser. No. 281,618
Int. Cl.[2] B21B 37/00
U.S. Cl. 364—468 8 Claims



7. An automated system in which job definitions and system variables (including signals) are assigned and are referred to by alphanumeric names, said system comprising:

a memory containing a plurality of addressable storage locations including at least one file storage area in which variable-length data files may be stored, at least one directory storage area in which entries containing an alphanumeric name and a memory address may be stored, at least one variable status data storage area in which may be stored data defining the status of variables including signals, an empty file pointer location, and an empty directory pointer location;

at least one linkage interconnecting all locations in the file storage area not containing data files to said empty file pointer location;

at least one linkage interconnecting all locations in the directory storage area not containing entries to said empty directory pointer location;

loader means for loading job definitions into said file storage area as files, said loader means including means for maintaining said linkage of unused file storage locations;

directory establishment means for loading job definition names and memory addresses, and also variable names and memory addresses, into said directory storage area as entries, said directory establishment means including means for maintaining said linkage of unused directory storage locations;

means for establishing and maintaining a plurality of hash-code linkages of directory entries containing names having some common property;

means having access to said directory through said hash-code linkages for replacing references within job definitions to job definitions and variables by name with the addresses of the corresponding job-definition files and variable-status-data storage locations;

means for generating a plurality of incoming signals;

means for adjusting the status data in selected locations within said variable-status-data storage area to correspond with the status of the incoming signals;

means for generating a plurality of outgoing signals;

means for adjusting the status of said outgoing signals to correspond with the status data in selected locations within said variable status data storage locations;

means for carrying out the system operations called for by said stored job definitions, including the alteration of the

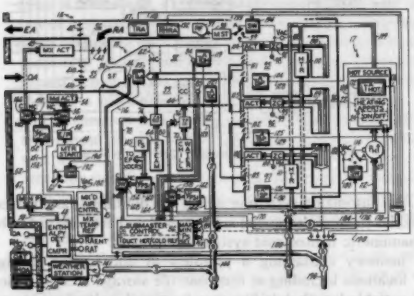
status of variables including signals as a function of the status of other variables including signals and also including the triggering of the execution of system operations defined by other job definitions, where all references to variables and job definitions are by address; and

an operating system or process connecting to said incoming and outgoing signals.

4,215,408
TEMPERATURE CONTROL OF UNOCCUPIED LIVING SPACES

John E. Games, Granby, and William W. Bitterli, Simsbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 12, 1977, Ser. No. 860,026
Int. Cl.[2] G06F *15/20*; F24F *3/00*
U.S. Cl. 364—505 **16 Claims**



1. Apparatus for controlling, in combination during unoccupied periods, the operation of an HVAC and perimeter heating system providing temperature regulation in a living space having occupied and unoccupied periods, the HVAC output including hot air from an air handler heating apparatus which modulates the discharge temperature in dependence on a space temperature error signal presented thereto at a magnitude equal to the temperature difference between an actual space temperature signal and a space heat reference temperature signal, the air handler including a fan for forcing the hot air into the space, the perimeter heating system providing hot fluid from a hot source at a determined discharge temperature, the hot fluid being presented to heaters in the space by a pump, the fan and pump each energized through connection to a voltage source, the apparatus comprising:

temperature sensor means, for providing sensed temperature signals including, an actual hot air discharge temperature signal, an actual hot fluid discharge temperature signal, and an actual space temperature signal;

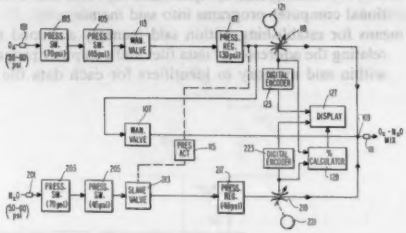
electronic processing means, providing an actual time of day signal, and having means for storing signals including real time signals establishing a plurality of real time intervals, each interval representative of an associated one of the space occupied and unoccupied periods, said processing means comparing said actual time of day signal with said real time intervals for providing an unoccupied signal manifestation in response to said actual time of day signal indicating a present unoccupied period, said means for storing signals further including a perimeter heat actuating temperature signal, said processing means being responsive to said sensed temperature signals for comparing said actual space temperature signal with said perimeter heat actuating temperature signal for providing, in the presence of said unoccupied signal manifestation, a perimeter heat pump off gate signal in response to said actual space temperature signal indication of a space temperature higher than said perimeter heat actuating temperature signal; and

pump switch means, interconnected between the voltage source and the pump, and responsive to said pump off gate signal presented at a gate input thereof, said switch means providing a connection of the pump to the voltage source in the absence of said pump off gate signal, said switch means not providing the connection in the presence of said pump off gate signal.

4,215,409
FLOW CONTROL SYSTEM FOR ANESTHESIA APPARATUS

Robert J. Strowe, Summerville, S.C., assignor to McKesson Company, North Charleston, S.C.

Filed Mar. 13, 1978, Ser. No. 886,132
Int. Cl.[2] G05D *11/00*; A61M *17/00*
U.S. Cl. 364—510 **19 Claims**



1. Analgesia/anesthesia apparatus comprising in combination the following:

separate gas flow lines and associated means for connection of said lines to separate supplies of at least two gases;

means, in each said line, for varying the rate of gas flow through said line;

encoder means, coupled to said gas flow rate varying means, for encoding the state thereof;

first means for visual display responsive to the output of said encoder means;

calculator means, coupled to said gas flow rate varying means, for generating signals representative of the ratio of one of said rates of gas flows to the total gas rate of flow; and

separate second means for visual display of said ratio responsive to said generated signals.

4,215,410
SOLAR TRACKER

Jerome H. Weslow, Rte. 4, St. Pat's Dr., Green Bay, Wis. 54303, and James A. Rodrian, Menomonee Falls, Wis., assignors to Jerome H. Weslow; Harold J. Weslow; Thomas A. Weslow, all of Green Bay; Paul R. Netzow and Roland Weslow, both of Hartland, all of, Wis.

Filed Feb. 9, 1979, Ser. No. 10,660
Int. Cl.[2] G06F *15/46*; F24J *3/02*; G05D *1/12*
U.S. Cl. 364—516 **16 Claims**

2. A controller for causing a solar energy utilizing device, which has motor means for angulating it about first and second axes, to be directed toward the sun as the sun moves across the sky, said controller comprising:

means for providing data representative of the time of the day, the day of the year and the latitude at which said device is used,

processor means and means for storing a program for controlling the functions of said processor means,

memory means for storing first positional data representative of the angular positions of said device about said first and second axes at the prevailing time,

said processor means being controlled by said program to use said data to calculate second positional data representative of the angular positions to which said device is

required to be angulated about said axes for said device to be directed toward the sun at the end of a predetermined interval beginning with the prevailing time,

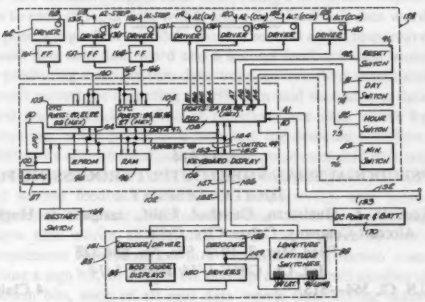
said program further controlling said processor to calculate data representative of the amount of movement required for said solar energy utilizing device to move about said axes to said required angular positions,

said program further controlling said processor to modify said first positional data for it to represent the positional data resulting from movement of said device about said axes, and

means responding to said data representative of said amount of movement by controlling said motor means to turn said device about said axes toward an angular position corresponding with said second positional data.

12. An open loop controller for use with a solar energy utilizing device comprising means for mounting said device for angulating on azimuth and altitude axes to keep said device directed toward the sun as it moves across the sky, azimuth and altitude drive motor means for turning said device on said axes, respectively, said controller comprising:

central processor means including memory means, said memory means storing data corresponding with the declination of the sun for the day, the hour angle of the sun, the longitude at which said device is installed and the latitude at which said device is installed, said processor means



having a program stored in said memory means for using said data to calculate data representative of the azimuth and altitude axes angles required for said device to be directed toward the sun at the prevailing time of the day,

said memory means also storing positional data representative of the present angular positions of said device about said azimuth and azimuth axes,

said program controlling said processor means to produce second positional data representative of the required angular positions of said device about said azimuth and altitude axes at the end of a predetermined interval for said device to be directed toward the sun,

said program further controlling said processor means to determine data representative of the rate of movement required for said solar energy utilizing device to move about said axes to said required angular positions,

said program further controlling said processor means to modify said first positional data to the new instantaneous values resulting from movement of said device about said axes at the rate of movement which has been determined, and

means responding to said data representative of said rate of movement by controlling said motor means to turn said device about said azimuth and altitude axes toward an angular position corresponding with said second positional data.

4,215,411

METHOD AND APPARATUS FOR THE COMPARATIVE DETERMINATION OF AN UNKNOWN MASS

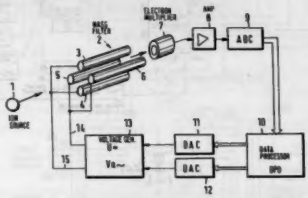
Jochen Franzen, Wildeshausen, Fed. Rep. of Germany, assignor to Varian Mat GmbH, Bremen, Fed. Rep. of Germany

Filed Aug. 15, 1978, Ser. No. 933,921

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1977, 2737199

Int. Cl.[2] **G06F** *15/52;* **B01D** *59/44;* **H01J** *39/50*

U.S. Cl. 364—527 **5 Claims**



1. Apparatus for accurately determining the mass of an unknown substance, the apparatus including an ion source for emitting ions of at least two known masses with one mass being larger than the other mass and ions of the unknown substance comprising; said ion source providing an input to a quadrapole mass filter, detector means positioned on the output side of the quadrapole mass filter for producing a control signal in accordance with ions of differing masses for controlling the production of a DC voltage and an AC voltage coupled to the quadrapole mass filter, an arithmetic unit of a data processing device (10) coupled to the output of the detector means, the arithmetic unit first producing an electrical signal representing the difference between a signal representing one of the larger known masses (m2) and a signal representing one of the smaller known masses (m1) and multiplying the difference signal (m2–m1) thus produced by q quotient signal (x1a/x12) of which the dividend signal (x1a) is formed by an electrical signal corresponding to the distance between a mass line (18) of the unknown mass (ma) and the mass line of the known mass (m1) and of which the divisor signal (x12) is formed by an electrical signal corresponding to the distance between the mass line (16) of the smaller known mass (m1) and the mass line (17) of the larger known mass (m2), the arithmetic unit adding the thus-formed product signal to the electrical signal corresponding to the smaller known mass (m1) to form a sum signal which represents the size of the unknown mass (ma), and voltage generating means receiving control signals from said data processing device and generating a feedback voltage to said quadrapole mass filter to shift the transmission range thereof for obtaining said mass lines.

4,215,412

REAL TIME PERFORMANCE MONITORING OF GAS TURBINE ENGINES

Joseph L. Bernier, Issaquah, Wash., and Peter W. Kamber, Hawi, Hi., assignors to The Boeing Company, Seattle, Wash.

Filed Jul. 13, 1978, Ser. No. 923,950

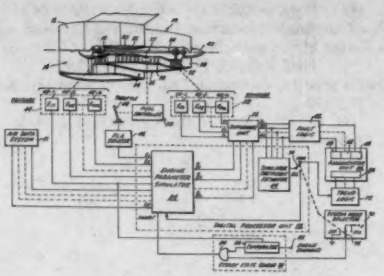
Int. Cl.[2] **G06F** *15/20, 15/32*

U.S. Cl. 364—551 **16 Claims**

1. A system for monitoring at least one performance parameter of a gas turbine engine installation comprising:

first sensor means for supplying a signal representative of the current value of each monitored performance parameter;

second sensor means for supplying a first plurality of signals representative of the current values of an associated plurality of operating parameters of the engine installation being monitored, said plurality of signals being selected so that a signal



$$y = \sum_{i=1}^{m} x_i c_i$$

provides a current estimate of each monitored performance parameter where y denotes the estimated value of each monitored performance parameter, x_i denotes a series of m independent performance parameters each having a current value dependent on the current value of selected ones of said plurality of signals supplied by said second sensor means and c_i denotes a set of m scalar simulation coefficients;

first signal processing means responsive to said plurality of signals supplied by said second sensor means, said first signal processing means including means for supplying a second plurality of signals representative of the current value of each of said independent performance parameters x_i, means for supplying a third plurality of signals representative of each of said simulation coefficients c_i and means for combining predetermined signals of said second and third plurality of signals to supply a signal representative of the current value of each estimate y of said monitored performance parameters; and,

second signal processing means responsive to each of said signals representative of the current value of each estimate y of said monitored performance parameters and responsive to each of said signals supplied by said first sensor means for supplying a difference signal representative of the difference between the actual current value of each of said monitored performance parameters and the current estimated value of that same performance parameter.

4,215,413

MEASURING DEVICE FOR INTEGRAL VALUES FORMED OVER A TIME SPAN

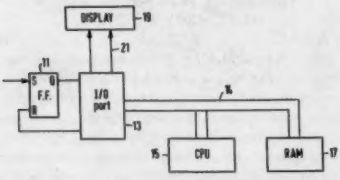
Reinhard Stark, and Günter Steinmüller, both of Nuremberg, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 29, 1978, Ser. No. 920,253

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1977, 2729617

Int. Cl.[2] **G06M** *3/14;* **G01F** *1/00*

U.S. Cl. 364—570 **2 Claims**



1. A measuring device for integral values formed over a constant time span which is constantly updated, said device receiving, as inputs, pulses representing a fixed quantity of a parameter being measured, comprising:

(a) a filp-flop having as setting inputs, the pulses representing a fixed quantity; and

(b) a microcomputer having at least a central processing unit and a random access memory and having the output of said flip-flop as an input, said central processing unit programmed to sequentially address the memory cells of said random access memory for equal time intervals which are shorter than the shortest possible interval between said pulses and to reset said flip-flop before addressing the following one of said memory cells, all of said memory cells being consecutively accessed in a period equal to said fixed time span, whereafter the sequence of the accessing is repeated, said central processing unit further programmed to write a "1" into said memory cell being accessed for each arriving pulse sensed at said flip-flop, said central processing unit further programmed to add, to a memory location representing an instantaneous value, a "1" for each pulse received and at the same relative time to subtract from said memory location, the value that was stored in said memory cell being accessed during the preceding period.

4,215,414

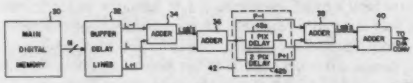
PSEUDOGAUSSIAN VIDEO OUTPUT PROCESSING FOR DIGITAL DISPLAY

Kenneth A. Huelsman, Carlsbad, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 7, 1978, Ser. No. 884,325

Int. Cl.[2] **G06F** *3/14;* **H04N** *5/14*

U.S. Cl. 364—515 **4 Claims**

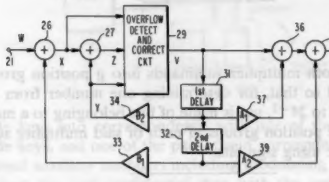


1. In a system having a memory for storing video data for display in an interlaced manner such that all odd lines are first displayed in a frame, and then all even lines, one line at a time, a method for generating a pseudogaussian characteristic in the display of video data comprising the steps of reading out two adjacent lines L and L+1 from memory during the same line readout time interval, delaying line L+1 one line interval for presentation as line L−1 in the processing when a subsequent set of lines L and L+1 are read from memory for display of the next line L, reading out said subsequent set of lines L and L+1 from memory during the same readout time interval, summing the value of each picture element of the next line L readout of said memory for display with a predetermined fraction of the sum of the values of the diametrically opposite picture elements in at least immediately adjacent subsequent lines L+1 and L−1, and summing the value of each picture element P of the next line L thus processed with a predetermined fraction of the sum of the values of similarly processed picture elements of the same next line L utilizing at least immediately adjacent picture elements P−1 and P+1.

4,215,415
RECURSIVE DIGITAL FILTER COMPRISING A CIRCUIT RESPONSIVE TO FIRST SUM AND FEEDBACK SIGN BITS AND SECOND SUM SIGN AND INTEGER BITS FOR DETECTING OVERFLOW IN THE SECOND SUM

Akira Kanemasa, and Hisashi Sakaguchi, both of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Sep. 19, 1978, Ser. No. 943,836
Claims priority, application Japan, Sep. 19, 1977, 52-113097; Sep. 22, 1977, 52-114845
Int. Cl.[2] G06F *15/34, 7/48*
U.S. Cl. 364—724 9 Claims



1. In a recursive digital filter comprising a first adder responsive to each of input data words and a first feedback data word for producing a first sum data word, a second adder responsive to said first sum data word and a second feedback data word for producing a second sum data word, an overflow detect and correct circuit for detecting overflow in said second sum data word and producing a first of overflow-free data words by correcting, when overflow is detected, the detected overflow, a first and a second feedback device responsive to said first and all other overflow-free data words for producing said first and said second feedback data words, respectively, and means responsive to all said overflow-free data words for producing output data words, all said data words being given by two's complement representation in a common word format comprising a sign bit, an integer bit, and a predetermined number of fraction bits, each of all said data words thus having corresponding bits in others of all said data words, said first adder, said second feedback device, and said second adder substantially simultaneously producing the corresponding bits of the respective ones of said first sum, said second feedback, and said second sum data words in bit series, the improvement wherein said overflow detect and correct circuit comprises:

first means responsive to the sign bits of said first sum, said second feedback, and said second sum data words and the integer bit of said second sum data word for producing an overflow detect pulse indicative of presence and absence of the overflow and a first polarity decision pulse indicative at least when said overflow detect pulse indicates presence of overflow, of polarities of the sign, the integer, and the fractional bits of said first overflow-free data word;

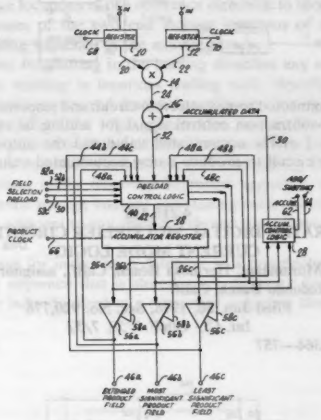
second means responsive to said overflow detect and said first polarity decision pulses for producing, only when said overflow detect pulse indicates presence of overflow, the sign, the integer, and the fractional bits of said first overflow-free data word with polarities decided by said first polarity decision pulse; and

third means responsive to said overflow detect pulse and said second sum data word for producing, only when said overflow detect pulse indicates absence of overflow, the sign, the integer, and the fractional bits of said first overflow-free data word with polarities determined by the corresponding bits of said second sum data word.

4,215,416
INTEGRATED MULTIPLIER-ACCUMULATOR CIRCUIT WITH PRELOADABLE ACCUMULATOR REGISTER

John J. Muramatsu, Hermosa Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Mar. 22, 1978, Ser. No. 888,980
Int. Cl.[2] G06F *7/48*
U.S. Cl. 364—736 9 Claims



7. An integrated digital multiplier-accumulator circuit comprising:

a digital multiplier circuit;

an accumulator register having input terminals and output terminals;

a set of data terminals for the application of externally supplied input data to said accumulator register;

a summing circuit connected to receive input signals from said multiplier circuit and from said accumulator register and to provide an output signal indicative of the sum of the input signals; and

preload control means, including means for selecting between data derived from said summing circuit and data supplied through said data terminals, and transmitting such selected data to said accumulator register, said preload control means being connected to receive inputs from said data terminals and from said summing circuit output signal, and to provide outputs to said accumulator register;

and wherein said preload control means effects preloading of said accumulator register with selected data when said preload control means selects data supplied through said data terminals, and effects accumulation of data from said multiplier circuit in said accumulator register, when said preload control means selects data derived from said summing circuit.

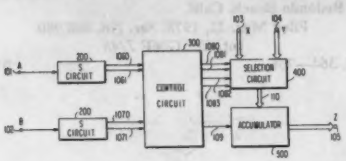
4,215,417
TWO-TERM VECTOR MULTIPLIER

Takao Nishitani, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Jan. 26, 1979, Ser. No. 6,707
Claims priority, application Japan, Jan. 27, 1978, 53-8546
Int. Cl.[2] G06F *7/38*
U.S. Cl. 364—736 1 Claim

1. A two-term vector multiplier for calculating AX+BY, comprising: first and second minimal-representation generating circuit means for separately converting first and second variables A and B, respectively, into standard type-minimal representation codes; a control circuit means responsive to the minimal representation codes of said first and second variables

for generating a selection signal and an addition-subtraction control signal; a selection circuit means responsive to third and fourth variables X and Y and to said selection signal for selecting one of the values X, Y, Y/2, and 0; and an accumulator



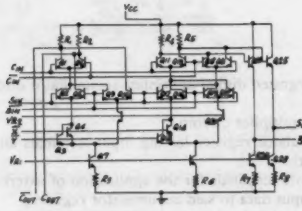
means connected to said selection circuit and responsive to said addition-subtraction control signal for adding or subtracting between $\frac{1}{4}$ of the accumulated value and the output of said selective circuit to produce a new accumulated value.

4,215,418

INTEGRATED DIGITAL MULTIPLIER CIRCUIT USING CURRENT MODE LOGIC

John J. Muramatsu, Hermosa Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jun. 30, 1978, Ser. No. 920,776
Int. Cl.[2] G06F *7/50, 7/52*
U.S. Cl. 364—757 **8 Claims**



1. For use in a monolithic integrated multiplier circuit, the combination of:

a plurality of NPN transistors and resistors fabricated in accordance with a high-density triple diffusion process allowing for use of a two-micron minimum geometry, and correspondingly small junction depths, to provide a very high packing density and a corresponding low defect rate and low production cost; and

circuit means for connecting said transistors and resistors to operate in current mode logic, to provide a circuit with fewer and smaller resistors, and a desirably low speed-power product.

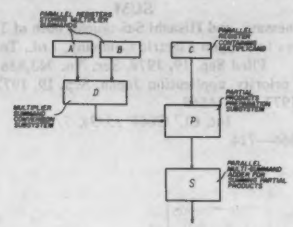
4,215,419

METHOD FOR BINARY MULTIPLICATION OF A NUMBER BY A SUM OF TWO NUMBERS AND A DIGITAL SYSTEM FOR IMPLEMENTATION THEREOF

Stanislaw Majerski, 43/9 Zamoyskiego Str., Warsaw, Poland

Continuation of Ser. No. 802,187, May 31, 1977, abandoned.
This application Dec. 14, 1978, Ser. No. 969,264
Int. Cl.[2] G06F *7/52*
U.S. Cl. 364—760 **4 Claims**

1. Method of binary multiplication of a number by a sum of two numbers comprising the steps of: converting in parallel a multiplier expressed by two numbers-summands presented in binary form, without performing effective addition of said summands, into bit groups representing the integers from the range -2^{g-1} to $+2^{g-1}$ said integers being the digits of the multiplier expressed in a redundant positional form with the basis 2^g, where g is an integer from the range from 1 to 4; forming partial products being the multiplicand multiples shifted with respect to each other, said multiples being determined by the bit groups representing said integers from the range -2^{g-1} to $+2^{g-1}$; adding said partial products to obtain a full product of the number by the sum of two numbers; said converting step being performed so that bits being identically



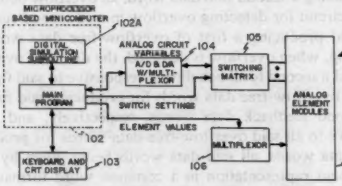
grouped in both multiplier summands into g position groups are processed so that, for determining one number from the range -2^{g-1} to 2^{g-1}, use is made of bits belonging to a maximum of three position groups of each of said multiplier summands and/or using sign bits.

4,215,420

PARITY SIMULATOR

John G. Kassakian, Newton, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 13, 1978, Ser. No. 886,222
Int. Cl.[2] G06G *7/63*
U.S. Cl. 364—802 **20 Claims**



1. A simulator for modeling an electrical network that comprises, in combination:

a plurality of synthetic electrical elements interconnected to simulate the electrical network, said synthetic elements having electrical terminals and having physical voltages between terminals and physical currents flowing through the terminals that correspond respectively to scaled values of actual physical terminal voltages and scaled values of actual physical terminal currents in said electrical network, the synthetic elements being interconnected to produce a model which is topologically equivalent to the modeled network.

4,215,421

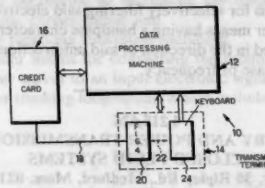
DATA-PROCESSING SYSTEM WHICH PROTECTS THE SECRECY OF CONFIDENTIAL DATA

Georges J. L. Giraud, Le Vesinet, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Jun. 5, 1978, Ser. No. 912,855
Claims priority, application France, Jun. 7, 1977, 77 17436
Int. Cl.[2] G06F *1/00;* H04L *9/02;* G08B *29/00*
U.S. Cl. 364—900 **15 Claims**

1. A data processing system comprising a data-processing machine having means associated therewith, via a transmission line, for transmitting data, said data being of the type which includes confidential data, and a plurality of first members

auxiliary to the machine, each said members being adapted to receive at least the said confidential data from the said transmitting means via the same transmission line and to process this data, said transmitting means being connected to a plurality of second auxiliary members corresponding to respective ones of the first auxiliary members, each pair of corresponding first and second auxiliary members including respective generators for generating first and second code keys, generator means for generating a reference signal for bringing one of the said first



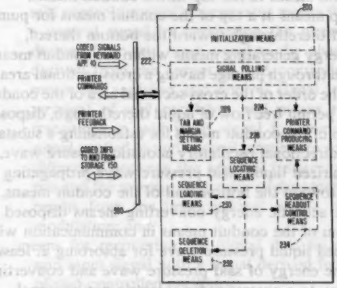
code keys into correspondence with one of the said second code keys, and one of the pair of said corresponding first and second auxiliary members including modulating means to mix at least the said confidential data with the code key corresponding to the said auxiliary member of that pair to form a combined signal, while the other auxiliary member includes a demodulating means which reacts to the key brought into correspondence from the said member to the said combined signal to reconstitute the said confidential data.

4,215,422

SELECTIVELY MODIFIABLE PHRASE STORAGE FOR A TYPEWRITER

William R. McCray, and Edward V. Rutkowski, Jr., both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 22, 1978, Ser. No. 908,596
Int. Cl.[2] G06F *3/10, 7/02*
U.S. Cl. 364—900 **8 Claims**



1. A code storage system for a typewriter of the kind having printing apparatus controlled by coded command signals and having keyboard apparatus for producing coded keyboard signals according to operator key and switch actuations, which coded keyboard signals correspond to various typewriter functional and printing operations, said storage system comprising:

means, actuable by the operator, for producing at least one signal to establish a sequence storage interval and for designating a code sequence identity from a preselected set thereof,

a read/write storage having an ordered series of addressable locations defining a storage area which extends from a leading end to a trailing end,

a means for initially storing, toward the leading end of said storage area, delimeters corresponding to the respective sequence identifiers of said preselected set thereof,

means responsive to said sequence identifying signal for loading codes corresponding to keyboard signals into a storage area of said read/write storage during a storage interval, said loading means including

(1) means, responsive to stored sequence delimeters, for progressively accessing and for examining the contents of storage locations in one reference direction to identify the addresses of the two end storage locations of a corresponding sequence in the storage area,

(2) means for shifting in the leading direction any sequence codes residing in locations trailing such identified locations, the source and destination addresses for such codes being defined by logic means that increments the end point addresses of the identified sequence iteratively,

(3) means responsive to said interval establishing means for receiving codes from the keyboard apparatus during a sequence storage interval and storing such codes in locations adjacent to any shifted code and toward said trailing end, and

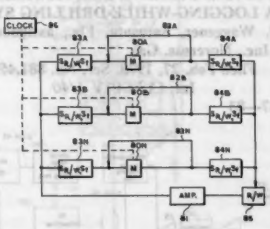
(4) means for including a delimiter at a preselected end of each sequence that is stored, each delimiter including a code individualized to a respective sequence identity.

4,215,423

FAST ACCESS CHARGE COUPLED DEVICE MEMORY ORGANIZATIONS FOR A SEMICONDUCTOR CHIP

Satish L. Rege, Piscataway, N.J., and Beng-Yu Woo, San Diego, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 881,434, Feb. 27, 1978, Pat. No. 4,156,287, which is a division of Ser. No. 734,351, Oct. 20, 1976, Pat. No. 4,112,504. This application Oct. 2, 1978, Ser. No. 947,556
Int. Cl.[2] G11C *21/00*
U.S. Cl. 365—77 **1 Claim**



1. A charge coupled device memory organization comprising:

a plurality of storage loops each containing a return path;

a read/write station;

a plurality of pairs of read and write switches, each pair for each storage loop to selectively couple that respective storage loop to said read/write station for reading and writing operations;

a refresh amplifier coupled between said read/write station and said plurality of write switches; and

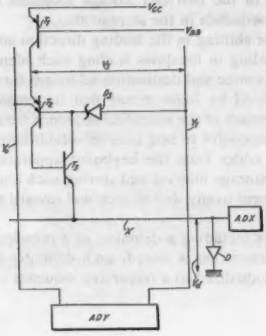
clock means simultaneously coupled to all of said storage loops to supply clocking signals to shift all of said storage loops at the same time.

4,215,424

DESCRIPTIVE RESUME RANDOM ACCESS STATIC MEMORY ELEMENT

Ngu T. Pham, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 10, 1979, Ser. No. 2,308
Claims priority, application France, Jan. 13, 1978, 78 00933
Int. Cl.[2] G11C *11/40*
U.S. Cl. 365—174 **10 Claims**



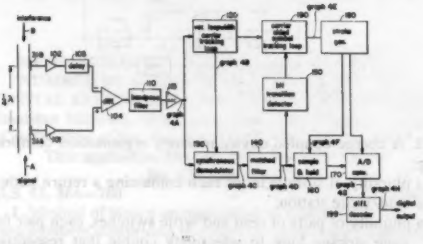
1. A random access memory element comprising a first and a second complementary transistor, integrated upon the same substrate, and having respective collectors, bases and emitters, said collector of said first transistor and said base of said second transistor being constituted by a first semiconducting region, said base of said first transistor and said collector of said second transistor, being constituted by a second semiconducting region forming a rectifying junction with said first region, said first transistor having a further emitter having connection means to constant current and being at a distance from said collector substantially higher than that of said emitter, said emitter of said first transistor having connection means to a first Y addressing device, and said emitter of said second collector having connection to a first Y addressing device.

4,215,425

APPARATUS AND METHOD FOR FILTERING SIGNALS IN A LOGGING-WHILE-DRILLING SYSTEM

William N. Waggener, Sarasota, Fla., assignor to Sangamo Weston, Inc., Norcross, Ga.

Filed Feb. 27, 1978, Ser. No. 881,459
Int. Cl.[2] G01V *1/40*
U.S. Cl. 367—83 **23 Claims**



14. A logging-while-drilling apparatus for obtaining subsurface measurements during drilling in a fluid-filled borehole and for communicating the measurements to the surface of the earth, comprising:

a downhole sensing and transmitting subsystem including

means mountable on a drill string for obtaining measurement information;

means for generating acoustic carrier waves at a nominal frequency in the borehole fluid;

means for PSK modulating the generated acoustic carrier waves in accordance with digital data representative of said measurements by momentarily unidirectionally either decreasing or increasing the frequency of said acoustic carrier waves; and

an uphole receiving subsystem including

transducer means for converting the modulated acoustic carrier waves to electronic signals; and

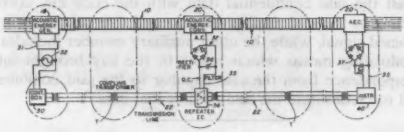
filter means for selectively filtering said electronic signals, said filter means having a bandpass characteristic which is skewed in the direction of said unidirectional decrease or increase of frequency.

4,215,426

TELEMETRY AND POWER TRANSMISSION FOR ENCLOSED FLUID SYSTEMS

Frederick Klatt, 36 Ripley Rd., Medford, Mass. 02155

Filed May 1, 1978, Ser. No. 901,459
Int. Cl.[2] G01V *1/40*
U.S. Cl. 367—83 **21 Claims**



1. A power and communication transmission system for an enclosed liquid filled conduit means comprising;

parameter communication means disposed at a bottom end of the conduit means and for sending communication signals to the top of the conduit means,

transmission line means associated with said fluid conduit means extending between top and bottom ends thereof for electrically transmitting signals from the parameter communication means to the top of the conduit means,

liquid pump means at a top of the conduit means for pumping liquid therethrough toward the bottom thereof,

acoustic energy generating means within the conduit means, defining a through passage having a cross-sectional area at least on the order of the cross-sectional area of the conduit means to permit free flow of liquid therethrough, disposed at the top of the conduit means for establishing a substantially unidirectional oscillatory acoustic pressure wave in the pressurized liquid, said pressure wave propagating in the fluid toward the bottom end of the conduit means,

at least one acoustic energy converting means disposed at the bottom of the conduit means in communication with the pumped liquid pressure wave for absorbing at least a part of the energy of said pressure wave and converting said energy to a corresponding electric power signal,

and means for coupling the power signal to the parameter communication means to provide operating power for communication signal transmission via the transmission line means.

4,215,427

CARRIER TRACKING APPARATUS AND METHOD FOR A LOGGING-WHILE-DRILLING SYSTEM

William N. Waggener, and Gene F. Schroeder, both of Sarasota, Fla., assignors to Sangamo Weston, Inc., Norcross, Ga.

Filed Feb. 27, 1978, Ser. No. 881,461
Int. Cl.[2] G01V *1/40*
U.S. Cl. 367—83 **23 Claims**

8. A logging-while-drilling apparatus for obtaining subsurface measurements during drilling in a fluid-filled borehole and

for communicating the measurements to the surface of the earth, comprising:

a downhole sensing and transmitting subsystem including

means mountable on a drill string for obtaining measurement information;

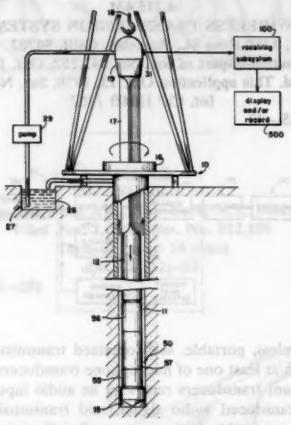
means for generating acoustic carrier waves at a nominal frequency in the borehole fluid;

means for PSK modulating the generated acoustic carrier waves in accordance with digital data representative of said measurements by momentarily unidirectionally either decreasing or increasing the frequency of said acoustic carrier signal; and

an uphole receiving subsystem including

transducer means for converting the modulated acoustic carrier waves to an input electronic signal; and

a carrier tracking loop circuit which includes a controlled



oscillator having a control terminal, the frequency of said oscillator being determined by a signal applied to said control terminal; comparator means for generating a control signal by comparing the phase of a signal derived from said input signal to the phase of a signal derived from the output of said controlled oscillator; means for applying said control signal to the control terminal of said oscillator; and means responsive to transitions in said input signal for compensating the signal applied to said control terminal to account for the difference between the nominal frequency of said carrier and the average frequency of the input signal which results from the unidirectional nature of the carrier modulation; and

means for recovering the digital data by demodulating said input signal with a signal derived from the output of said controlled oscillator.

4,215,428

TIME RATIO CONTROLLED INVERTER

Charles W. Van Marter, Syracuse; Raymond L. Rofini, Liverpool, and Laurence D. Smith, North Syracuse, all of N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 3, 1971, Ser. No. 120,410

Int. Cl.³ H04B *1/02*

U.S. Cl. 367—137 **10 Claims**

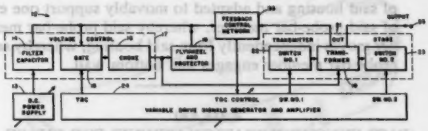
1. A transmitter, comprising in combination:

a power supply for producing a B+ voltage at the output thereof;

a power transformer having a center tapped primary winding and a pair of secondary windings, with one of said pair of secondary windings constituting the output of said transmitter;

a control signal generator means for producing a pair of switch drive signals and a time-ratio-control signal, the duration of which is inversely proportional to an input signal supplied thereto, at a trio of outputs thereof, respectively;

a first transistorized switch means connected between one of the switch drive signal outputs of said control signal generator means and one of the terminals of the primary winding of said power transformer for effecting the closing thereof in response to one of said switch drive signals;



a second transistorized switch means connected between the other switch drive signal output of said control signal generator means and the other terminal of the primary winding of said power transformer for effecting the closing thereof in response to the other of said switch drive signals; and

means connected between the B+ output of said power supply, the time-ratio-control signal output of said control signal generator means, and the center tap of the primary winding of said power transformer for varying the current thereto an amount that is proportional to the duration of the time-ratio-control signal received from said control signal generator means.

4,215,429

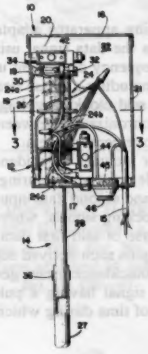
RODENT-REPELLING DEVICE

George Riach, 10424 Cary Cir., Cypress, Calif. 90720

Filed Dec. 29, 1978, Ser. No. 363

Int. Cl.² G08B *13/22*; H04B *11/00*

U.S. Cl. 367—139 **4 Claims**



1. A rodent-repelling device adapted to be supported within the ground and comprising:

a housing defined by side walls, a top cover, and a bottom wall having an enlarged opening disposed therein;

vibrating means located within said housing and comprising at least two solenoid coil units, each being independently and randomly activated;

probe means comprising a first probe member and a second probe member, said first probe member defined by a metal bar member having said solenoid coils supported and

affixed thereto, with one end of said bar extending outwardly through said enlarged opening in said housing, said second probe member having one end secured to said metal bar member and the opposite end thereof adapted to be received in said ground;

means connected to said solenoid coil units to supply electrical energy thereto, whereby a plurality of signals are generated between said coil units and said first and second probes so as to be transmitted into said ground;

means therein to cause intermittent current flow from said electrical energy to said coil units; and

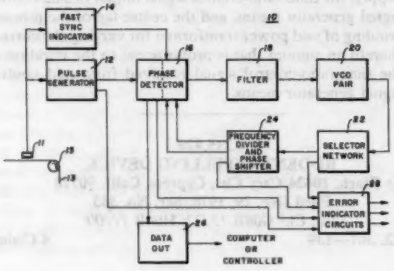
means within said housing to provide movement between said housing and said probe members, said movement means comprising a bracket fixedly mounted to one wall of said housing and adapted to movably support one end of said probe-bar member, whereby said probe-bar member moves independently from said housing, whereby said probe bar member engages said bottom wall.

4,215,430

FAST SYNCHRONIZATION CIRCUIT FOR PHASE LOCKED LOOPED DECODER

Allan L. Johnson, Jr., Wayzata, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Sep. 26, 1978, Ser. No. 945,990
Int. Cl.[2] H04L 7/04; H03D 3/24
U.S. Cl. 375—111 **12 Claims**



1. In data processing apparatus adapted to receive a data signal and to process the data signal using a clocking signal having a clocking frequency dependent upon a clocking voltage, said apparatus including a phase detector for generating an output to control said clocking voltage and thereby establish and maintain synchronization between said data and clocking signals, the improvement wherein:

said phase detector includes coincidence means having, as inputs, a preamble input active during the preamble of said data signal, first and second data inputs each derived from said data and clocking signals, wherein said second data input is the inverse of said first data input, and first and second timing inputs each derived solely from said clocking signal; said coincidence means generating a first phase detector output signal having a pulse width dependent upon the length of time during which said preamble, first data and first timing inputs are simultaneously high, and a second phase detector output signal having a pulse width dependent upon the length of time during which said preamble, second data and second timing inputs are simultaneously high;

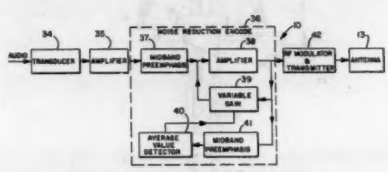
wherein the pulse width of each phase detector output signal is a selected width whenever the data and clocking signals are synchronized; and wherein said phase detector, in response to a condition other than synchronization, generates at least one of said phase detector output signals at a pulse width other than its selected width to change said clocking voltage, the resulting change in clocking frequency tending to synchronize the clocking signal with said data signal.

4,215,431

WIRELESS TRANSMISSION SYSTEM

John Nady, 1250 Rose St., Berkeley, Calif. 94702

Continuation-in-part of Ser. No. 842,152, Oct. 14, 1977, abandoned. This application Oct. 12, 1978, Ser. No. 950,574
Int. Cl.[3] H04B 1/62
U.S. Cl. 455—43 **8 Claims**

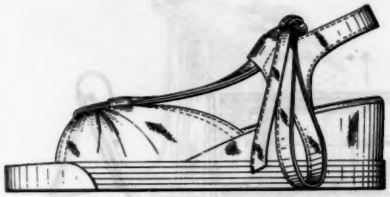


5. A wireless, portable, self-contained transmission system for use with at least one of microphone transducers and musical instrument transducers receiving an audio input and providing a transduced audio signal, said transmission system comprising a portable, battery powered, self-contained transmitter means for transmitting compressed signals to a remote receiving means, said transmitter means including noise reduction compression means responsive only to the transduced audio signal for compressing the transduced audio signal and providing a compressed output signal to a transmission means for transmission to said remote receiving means, said remote receiver means receiving the transmitted compressed signals and supplying a compressed transduced audio signal to noise reduction expansion means corresponding to said noise reduction compression means of said transmitter means, said noise reduction expansion means expanding the transmitted compressed signals for providing an audio output signal with an improved signal to noise ratio to a utilization means whereby substantially noise-free transmission is effected, said noise reduction expansion means including a variable gain means for receiving the transmitted compressed signals, average value detector means for controlling the gain of said variable gain means and being driven by a preemphasis means receiving the transmitted compressed signals.

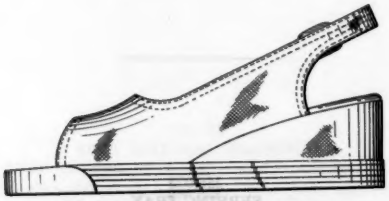
DESIGNS

JULY 29, 1980

256,064
SHOE
Jonas Senter, 910 Fifth Ave., New York, N.Y. 10021
Filed Jun. 2, 1978, Ser. No. 912,107
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—286



256,065
SHOE
Jonas Senter, 910 Fifth Ave., New York, N.Y. 10021
Filed Jun. 2, 1978, Ser. No. 912,108
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—291

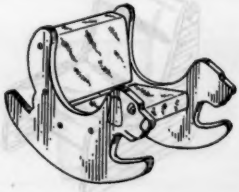


256,066
SOLE FOR FOOTWEAR
Vernon A. Hagg, 5245 Heritage Hills Dr., Bloomington, Minn. 55437, and Phillip W. Trask, 18300-32nd Ave. No., Wayzata, Minn. 55391
Filed Aug. 7, 1978, Ser. No. 931,830
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322

256,067
SOLE BODY FOR FOOTWEAR
Vernon A. Hagg, 5245 Heritage Hills Dr., Bloomington, Minn. 55437, and Phillip W. Trask, 18300-32nd Ave. No., Wayzata, Minn. 55391
Filed Aug. 7, 1978, Ser. No. 931,831
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322

256,068
FACE PLACE FOR A BELT BUCKLE
Alfred W. Danat, Madison, Ala., and John L. Schaefer, Alexandria, Va., assignors to Sallet, Inc.
Filed Apr. 7, 1978, Ser. No. 894,624
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D2—431

256,069
ROCKING CHAIR
Ronald W. Johnson, 4002 Burningtree La., Garland, Tex. 75042
Filed Jan. 5, 1978, Ser. No. 867,377
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—11



256,070

ROCKING CHAIR

T. William Fejer, Oak Park, and Stuart L. Koch, West Chicago, both of Ill., assignors to Plastofilm Industries, Inc., Wheaton, Ill.

Filed May 12, 1978, Ser. No. 905,221

Term of patent 14 years

Int. Cl. D6—*01*

U.S. Cl. D6—49

256,071

CHAIR

William J. Hershberger, Cincinnati, Ohio, assignor to Formica Corporation, Wayne, N.J.

Filed Nov. 7, 1977, Ser. No. 848,951

Term of patent 14 years

Int. Cl. D6—*01*

U.S. Cl. D6—66

256,072

COMBINED LAMP AND BATHTUB BOOK SUPPORT

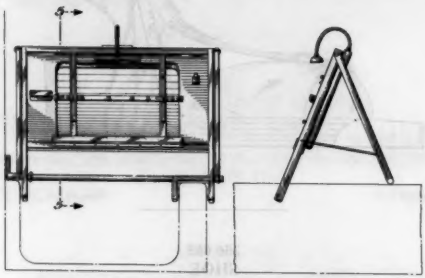
Kelly Parker, Clifton Park Apartments, Apt. 2, Bldg. 26, Wilmington, Del. 19802

Filed Nov. 29, 1978, Ser. No. 964,467

Term of patent 14 years

Int. Cl. D6—*04*; D26—*05*

U.S. Cl. D6—86



256,073

SERVING TRAY

Claus J. Caroee, Kirsebaerbakken 8, 3070 Snekkersten; Ole Frederiksen, Poppelvej 4, 3600 Frederikssund, and Boerge J. R. Christensen, Soendersoe park 29, 3500 Vaerloese, all of Denmark

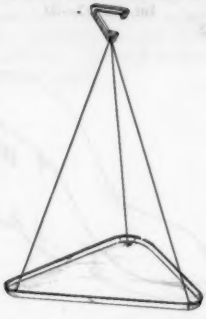
Filed Nov. 15, 1978, Ser. No. 961,475

Claims priority, application Denmark, May 16, 1978, 397/78

Term of patent 14 years

Int. Cl. D6—*06*; D7—*99*

U.S. Cl. D6—113

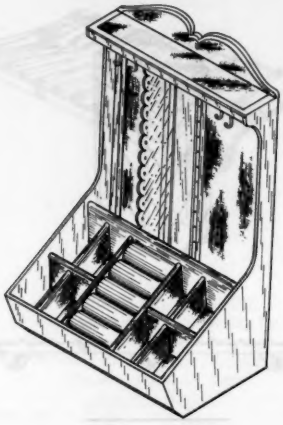


256,074

WALL MOUNTED JEWELRY ORGANIZER

Kurt F. Gruenewald, Utica, N.Y., assignor to Mele Manufacturing Co., Inc.

Filed Mar. 8, 1978, Ser. No. 884,717
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130

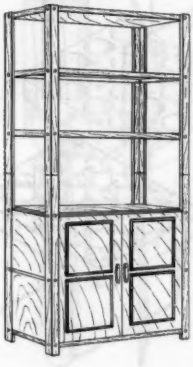


256,075

COMBINED CABINET AND SHELF UNIT

Milton E. Handler, Northbrook, and Richard Sylvan, Glenview, both of Ill., assignors to Hirsh Company

Filed Oct. 5, 1977, Ser. No. 839,512
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186

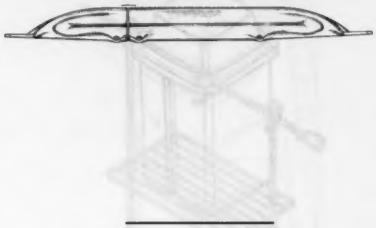


256,076

HEAD RAIL MEMBER FOR FOLDING BED

Melvin P. Spitz, Beverly Hills, and Peter C. Wilson, Long Beach, both of Calif., assignors to Kinematic Industries, Inc., Whittier, Calif.

Filed Nov. 6, 1978, Ser. No. 958,464
Term of patent 14 years
Int. Cl. D6—*01, 06*
U.S. Cl. D6—198



256,077

CUP WITH TONGUE DEPRESSOR

Raymond G. Brockman, and William C. Nadeau, 2623 Queenston Rd., Cleveland Heights, Ohio 44118, assignors to William C. Nadeau

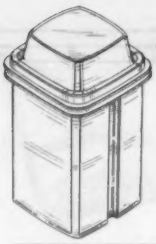
Filed Mar. 13, 1978, Ser. No. 885,547
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—6

256,078

STORAGE AND SERVING CONTAINER OR THE LIKE

Jack V. Croyle, North Providence, and Robert F. Bateman, Greenville, both of R.I., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Aug. 11, 1978, Ser. No. 933,004
Term of patent 14 years
Int. Cl. D07—*01, 07*
U.S. Cl. D7—16



256,080

SUGAR DISPENSER

William E. Bounds, 23790 Hawthorne Blvd., Torrance, Calif. 90505

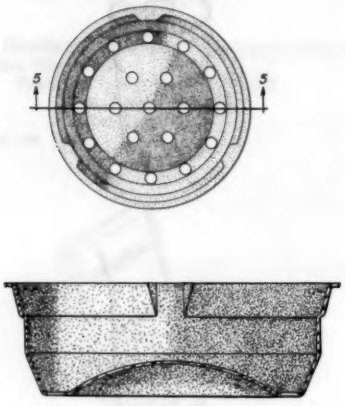
Filed Sep. 18, 1978, Ser. No. 943,246
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—52

256,079

COFFEE FILTER HOLDER

J. D. Moncrief, 3139 Woodmark Ct., Sacramento, Calif. 95821

Filed May 1, 1978, Ser. No. 901,733
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—47

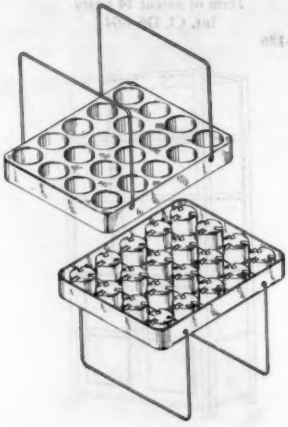


256,081

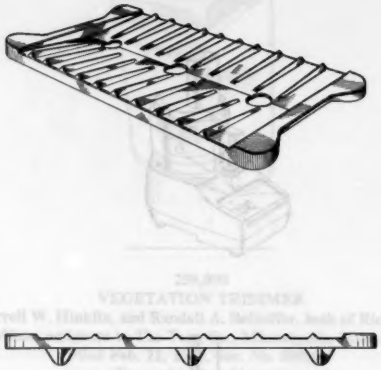
BEVERAGE CARRYING TRAY

Tom A. Patterson, 8689 W. 84th Cir., Arvada, Colo. 80005, and Bernard E. Quirk, 7054 Newland Ave., Arvada, Colo. 80003

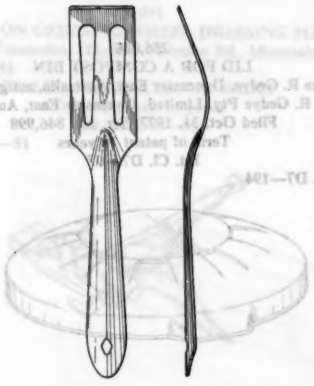
Filed Mar. 29, 1978, Ser. No. 891,485
Term of patent 14 years
Int. Cl. D07—*99*; D09—*03*
U.S. Cl. D7—71



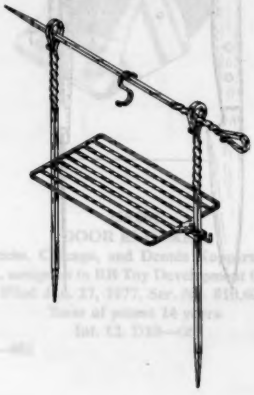
256,082
RACK FOR ROASTING FOOD ITEMS
Albert E. Colato, and James F. Pomroy, both of St. Paul, Minn., assignors to Plastics, Inc., St. Paul, Minn.
Filed Sep. 25, 1978, Ser. No. 945,180
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—85



256,083
CAKE TURNER OR SIMILAR ARTICLE
Clyde E. Ott, c/o Pace Precision Tool & Die Co., Ohio Ave., DuBois, Pa. 15801
Filed Jun. 7, 1976, Ser. No. 693,884
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—102

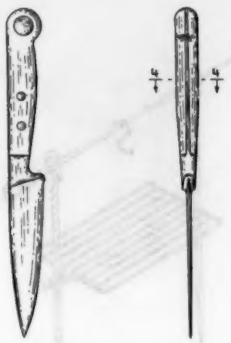


256,084
SUPPORT FOR POSITIONING COMESTIBLES OVER A FIRE
Robert E. Lepper, 5809 Arapahoe, Boulder, Colo. 80303
Filed Sep. 5, 1978, Ser. No. 939,559
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—107

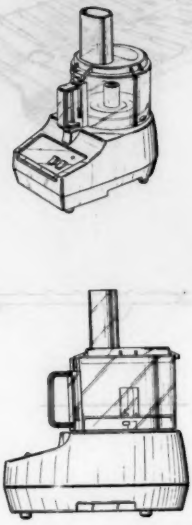


256,085
COOKING POT LID
Eleanor K. Tuggy, 447 Lemon Grove La., Santa Barbara, Calif. 93108
Filed Apr. 17, 1978, Ser. No. 896,783
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—131

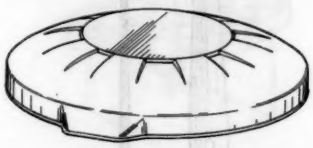
256,086
KNIFE OR SIMILAR ARTICLE OF CUTLERY
Ben Seibel, New York, N.Y., assignor to Oxford Hall Silversmiths, Ltd., New York, N.Y.
Filed Apr. 10, 1978, Ser. No. 895,215
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—151



256,087
FOOD PROCESSOR
Toshitada Minami, Tokyo, Japan, assignor to Koshinsha Co., Ltd., Tokyo, Japan
Filed Jul. 31, 1978, Ser. No. 929,901
Claims priority, application Japan, Apr. 30, 1978, 53-1748178
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—153



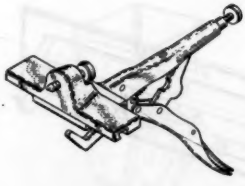
256,088
LID FOR A COMPOST BIN
Laurence R. Gedye, Doncaster East, Australia, assignor to L. R. & N. R. Gedye Pty. Limited, Doncaster East, Australia
Filed Oct. 31, 1977, Ser. No. 846,998
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—194



256,089
RECEPTACLE CONTAINER
Gerald J. Adamson, Toronto, Canada
Filed Mar. 20, 1978, Ser. No. 888,263
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—194

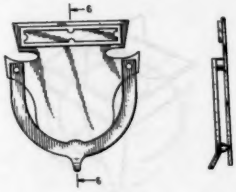
256,090
VEGETATION TRIMMER
Darrell W. Hinklin, and Randall A. Beihoffer, both of Richfield, Minn., assignors to The Toro Co., Minneapolis, Minn.
Filed Feb. 21, 1978, Ser. No. 880,027
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—08

256,091
CLAMP-ON GRINDING WHEEL DRESSING TOOL
William E. Fernandes, 211-A S. Whisman Rd., Mountain View, Calif. 94041
Filed Mar. 28, 1978, Ser. No. 891,163
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—51



256,092
SNUBBER FOR A RETRACTABLE BOAT DAGGER BOARD
Noel W. Stewart, Jr., P.O. Box 426, Ione, Calif. 95640
Filed May 24, 1978, Ser. No. 908,824
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382

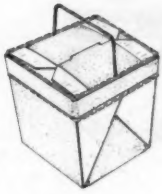
256,093
DOOR KNOCKER
Sam Kupperman, Chicago, and Dennis Kupperman, Glenview, both of Ill., assignors to RB Toy Development Co., Skokie, Ill.
Filed Jun. 27, 1977, Ser. No. 810,605
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D8—401



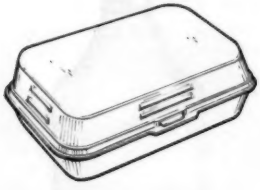
256,094
BOTTLE
Gunnar Friso, Plaisir, France, assignor to Richardson-Merrell, Inc., Wilton, Conn.
Filed Aug. 14, 1978, Ser. No. 933,774
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—115

256,095
BOTTLE
James L. Sandonato, Braintree, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Mar. 20, 1978, Ser. No. 888,581
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—147

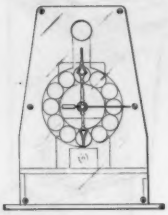
256,096
PACKAGING CONTAINER
Elsie M. Ganz, 268 Curtis Point Dr., Mantoloking, N.J. 08738
Filed May 13, 1977, Ser. No. 796,540
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



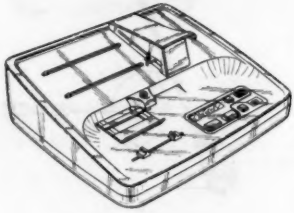
256,097
PACKAGING CONTAINER FOR FOOD OR THE LIKE
Christopher P. Amberg, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Jun. 10, 1977, Ser. No. 805,389
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



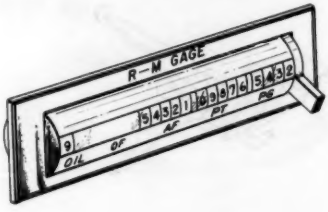
256,098
COMBINED CLOCK AND BANK
Frank H. Green, Rushville, Ind., assignor to J. A. F. E., Inc., Indianapolis, Ind.
Continuation-in-part of Ser. No. 616,546, Sep. 25, 1975, abandoned. This application Jun. 6, 1977, Ser. No. 804,182
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—2



256,099
DENSITOMETER
Helmut Schmidt, Mannheim, Fed. Rep. of Germany, assignor to Labora Mannheim GmbH für Labortechnik, Mannheim, Fed. Rep. of Germany
Filed May 12, 1978, Ser. No. 905,488
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1977, 1134
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—46



256,100
MILEAGE REMINDER
Conrad J. Baril, 34801 Chateau Way, Barstow, Calif. 92311
Filed May 23, 1978, Ser. No. 908,902
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D10—46



256,101
CALIPER

Takasi Kobasi, Utsunomiya, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

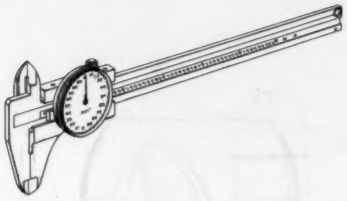
Filed Aug. 3, 1978, Ser. No. 930,510

Claims priority, application Japan, Feb. 7, 1978, 53/3843

Term of patent 14 years

Int. Cl. D10—*04*

U.S. Cl. D10—73



256,102
VOLTAGE METER

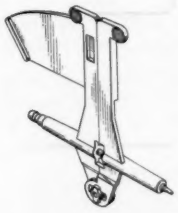
William K. Hayward, 27 Guildford Rd., Farnborough, Hampshire GU14 6PS, England

Filed Nov. 10, 1977, Ser. No. 850,427

Term of patent 14 years

Int. Cl. D10—*04*

U.S. Cl. D10—78



256,103
DIETARY SCALE

Dana W. Mox, Elk Grove Village, Ill., assignor to Hanson Limited, Sligo, Ireland

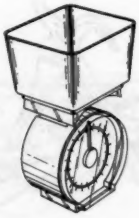
Filed Jun. 19, 1978, Ser. No. 916,806

Claims priority, application United Kingdom, Mar. 8, 1978, 982666/78

Term of patent 14 years

Int. Cl. D10—*04*

U.S. Cl. D10—91



256,104
AIRCRAFT WARNING LIGHT

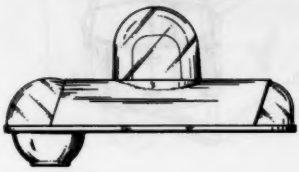
Robert A. Ferenc, Middletown, and Jack E. Gretta, Chester, both of Conn., assignors to Whelen Engineering Company, Inc., Deep River, Conn.

Filed Jun. 28, 1978, Ser. No. 919,868

Term of patent 14 years

Int. Cl. D10—*06*; D26—*06*

U.S. Cl. D10—114



256,105
BRACELET

Alfred J. Durante, Forest Hills, N.Y., assignor to Cartier, Inc., New York, N.Y.

Filed Jun. 7, 1978, Ser. No. 915,254

Term of patent 14 years

Int. Cl. D11—*01*

U.S. Cl. D11—4

256,106
JEWELRY FINDING

Josiah R. Jones, Waukegan, Ill., assignor to J. Russell's of Illinois Inc.

Filed Nov. 16, 1977, Ser. No. 851,890

Term of patent 14 years

Int. Cl. D11—*01*

U.S. Cl. D11—56

256,107

COLLAPSIBLE CONTAINER FOR PLANTS

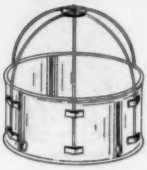
Milton J. R. Mitchener, 1305 1/2 N. McCadden Pl., Hollywood, Calif. 90028

Filed Apr. 2, 1979, Ser. No. 25,771

Term of patent 3½ years

Int. Cl. D11—*02;* D7—*07*

U.S. Cl. D11—148



256,108

COMBINED FLOWER POT AND SAUCER OR THE LIKE

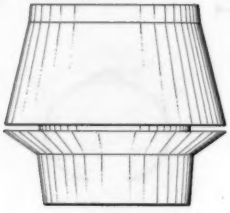
Stafford D. Collie, Severna Park, Md., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 12, 1979, Ser. No. 57,062

Term of patent 14 years

Int. Cl. D11—*02*

U.S. Cl. D11—152



256,109

COMBINED FLOWER POT AND SAUCER OR THE LIKE

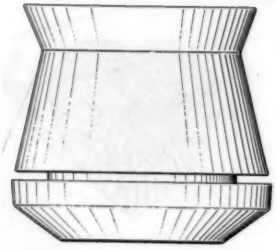
Stafford D. Collie, Severna Park, Md., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 12, 1979, Ser. No. 57,063

Term of patent 14 years

Int. Cl. D11—*02*

U.S. Cl. D11—152



256,110

COMBINED FLOWER POT AND SAUCER OR THE LIKE

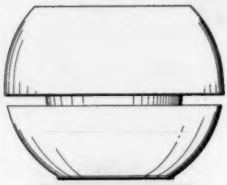
Donald Dunbar, Elgin; Evan W. Bell, Hoffman Estates, and Ted Dziewulski, Des Plaines, all of Ill., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 23, 1979, Ser. No. 14,470

Term of patent 14 years

Int. Cl. D11—*02*

U.S. Cl. D11—153



256,111

SKI VEHICLE

James J. Wagner, Venetia, Pa., assignor to SWECO, Inc., Pittsburgh, Pa.

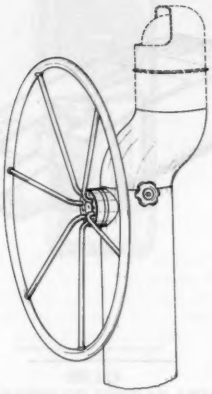
Continuation-in-part of Ser. No. 894,984, Apr. 10, 1978, abandoned. This application Apr. 27, 1979, Ser. No. 33,879

Term of patent 14 years

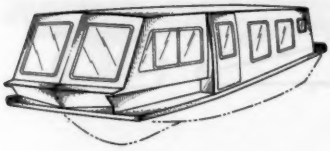
Int. Cl. D12—*14*

U.S. Cl. D12—9

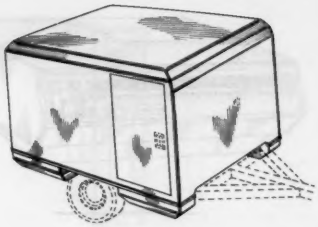
256,112
COMBINED BOAT STEERING WHEEL AND SUPPORT COLUMN
Mario Cura', Turin, Italy, assignor to A.T.N. S.p.A., Turin, Italy
Filed Nov. 10, 1977, Ser. No. 850,527
Claims priority, application Italy, May 17, 1977, 53170 B/77; May 17, 1977, 53171 B/77
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—70



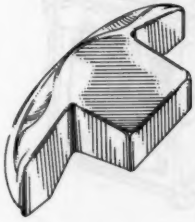
256,113
HOUSEBOAT DECK
Frank J. Fortier, 600 Railroad Ave., Pittsburg, Calif. 94565
Filed Jun. 19, 1978, Ser. No. 917,026
Term of patent 14 years
Int. Cl. D12—*06, 99*
U.S. Cl. D12—70



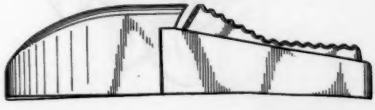
256,114
UTILITY LOAD BODY
George G. Bell, Jr., 3527 Edmar Pl., Jackson, Mich. 39216
Filed Jul. 24, 1978, Ser. No. 927,057
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—102



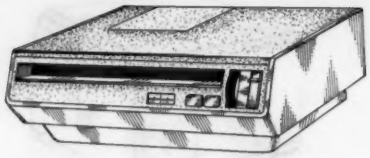
256,115
ACCESSORY CONSOLE FOR MOTORCYCLES
Tommy W. Dixson, 1509 W. Willetta, Phoenix, Ariz. 85007
Filed Jun. 28, 1978, Ser. No. 920,019
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—114



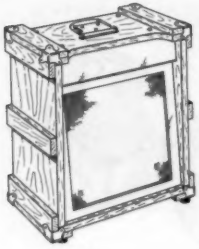
256,116
REMOTE CONTROL SWITCH
Norman Hunt, Leamington Spa, England, assignor to Associated Engineering Limited, England
Filed Jul. 19, 1978, Ser. No. 925,931
Claims priority, application United Kingdom, Feb. 2, 1978, 093157/78
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—37



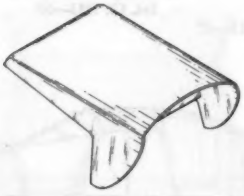
256,117
VIDEO DISC PLAYER
Marlan H. Polhemus, Chicago, and Andrew L. Alger, Wilmette, both of Ill., assignors to RCA Corporation, New York, N.Y.
Filed Jan. 3, 1978, Ser. No. 866,607
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—2



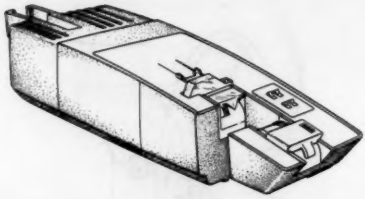
256,118
SOUND AMPLIFIER CABINET
Eugene Kornblum, Clayton, Mo., assignor to St. Louis Music Supply Company, Inc., St. Louis, Mo.
Filed Jan. 5, 1979, Ser. No. 1,147
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—33



256,119
HOOD FOR COMPUTER CATHODE-RAY TERMINAL
Francis L. Klemm, P.O. Box 586, Wrightsville Beach, N.C. 28480
Filed Mar. 31, 1978, Ser. No. 892,219
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—40

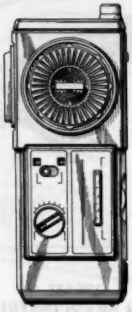


256,120
COMBINED PUNCH AND READER FOR PERFORATED TAPE
Robert E. Arko, Mt. Prospect; Joseph A. Bellino, Arlington Heights, and Richard A. Hein, Skokie, all of Ill., assignors to Teletype Corporation, Skokie, Ill.
Filed May 4, 1978, Ser. No. 903,646
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—49

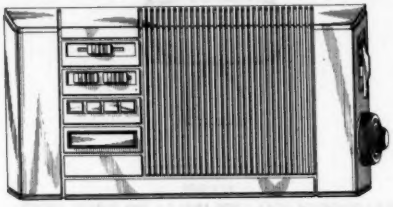


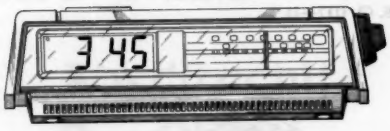
256,121
TELEPHONE SET
Takao Konto, No. 12-6, Minamiaoyama 7-chome, Minato-ku, Tokyo, Japan
Filed Mar. 30, 1979, Ser. No. 25,545
Term of patent 7 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

256,122
COMBINED RADIO AND WALKIE TALKIE OR SIMILAR ARTICLE
Richard Culbertson, Manlius, N.Y., assignor to General Electric Company
Filed May 8, 1978, Ser. No. 903,985
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68

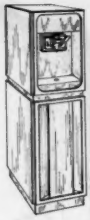


256,123
CLOCK RADIO OR SIMILAR ARTICLE
John T. Houlihan, Fayetteville, N.Y., assignor to General Electric Company
Filed Jul. 24, 1978, Ser. No. 927,738
Term of patent 14 years
Int. Cl. D14—*03*; D10—*01*
U.S. Cl. D14—73





256,124
SOFT SERVE MACHINE
Lee E. Adamson, Roscoe, Ill., and Robert B. Hauger, Beloit, Wis., assignors to Beatrice Foods Co., Chicago, Ill.
Filed Dec. 11, 1978, Ser. No. 967,998
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—82

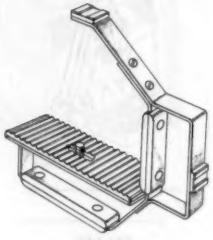


256,125
BEVERAGE DISPENSING HEAD
James W. Erickson, Appleton, Wis., assignor to The Cornelius Company, Anoka, Minn.
Filed Jun. 26, 1978, Ser. No. 919,527
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D15—120

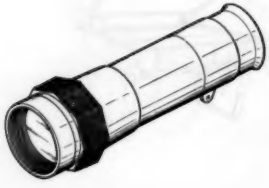
256,126
VACUUM PRESS
Lyle D. Hemperly, Jr., Naugatuck; Larry C. Ayer, Manchester, and David H. Trout, Woodbury, all of Conn., assignors to Seal Incorporated, Naugatuck, Conn.
Filed Jul. 28, 1978, Ser. No. 928,992
Term of patent 14 years
Int. Cl. D15—*99*; D18—*02*
U.S. Cl. D15—146

256,127
MICROFILM CAMERA
John W. Overman, Phoenix, Ariz., assignor to Bell & Howell Company, Chicago, Ill.
Filed Feb. 13, 1978, Ser. No. 877,218
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—02

256,128
FLASH ATTACHMENT BRACKET FOR A CAMERA
Paul H. Borisoff, 7726 Burnet Ave., Van Nuys, Calif. 91405
Filed Feb. 21, 1978, Ser. No. 879,680
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—47



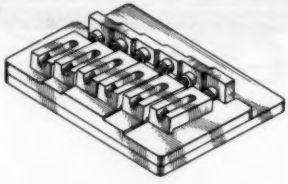
256,129
MONOCULAR
Genzo Mitsui, Tokyo, Japan, assignor to Specwell Corporation, Tokyo, Japan
Filed Dec. 1, 1977, Ser. No. 856,470
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—60



256,130
ELECTRIC PIANO, OR THE LIKE
Kunio Ohta, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan
Filed Aug. 2, 1978, Ser. No. 930,591
Claims priority, application Japan, Apr. 17, 1978, 53-15198
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D17—7

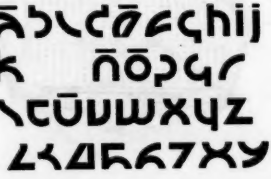
256,131
MUTE FOR BRASS INSTRUMENTS
Joseph Alessi, 15 Anchorage Ct., San Rafael, Calif. 94903
Continuation of Ser. No. 732,717, Oct. 15, 1976. This application Dec. 7, 1978, Ser. No. 967,438
Term of patent 14 years
Int. Cl. D17—*02*
U.S. Cl. D17—13

256,132
BRIDGE FOR GUITARS
Gregg Wilson, Irvine, Calif., assignor to CBS Inc., New York, N.Y.
Filed Apr. 11, 1978, Ser. No. 895,505
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—21

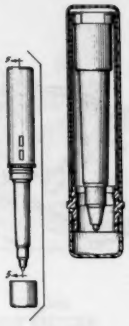


256,133
CASING FOR AN ELECTRONIC CALCULATOR
LeRoy J. LaCelle, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Feb. 27, 1978, Ser. No. 881,489
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7

256,134
TYPE FONT OF ALPHABET AND NUMERALS
Antonio DiNunzio, Artesa de Segre, 12, Madrid, Spain
Filed Jun. 15, 1978, Ser. No. 915,776
Claims priority, application Spain, Dec. 28, 1977, 14953
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—24



256,135
RETRACTABLE SAFETY WRITING INSTRUMENT
Bobby D. Storms, Rte. #2, Box 427, Bladenboro, N.C. 28320
Filed Sep. 25, 1978, Ser. No. 945,938
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—43



256,136
FOUNTAIN PEN
Gerd A. Müller, Eschborn, Fed. Rep. of Germany, assignor to C. Joseph Lamy GmbH, Heidelberg, Fed. Rep. of Germany
Filed Mar. 3, 1978, Ser. No. 883,341
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1977, 166
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—51

256,137

DESK SET AND PLANTER

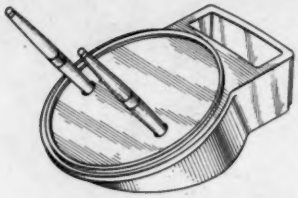
Raymond E. Cross, Lake Forest, Ill., assignor to Federal Research Corporation, Chicago, Ill.

Filed Jul. 3, 1978, Ser. No. 921,355

Term of patent 14 years

Int. Cl. D19—*02*

U.S. Cl. D19—75



256,138

PORTABLE EXHIBIT SYSTEM

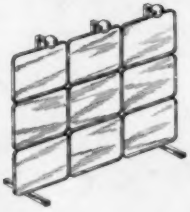
Ian A. Tesar, 53 River Rd., Cos Cob, Conn. 06807

Filed Mar. 13, 1978, Ser. No. 885,692

Term of patent 14 years

Int. Cl. D20—*03*

U.S. Cl. D20—10



256,139

ELECTRONIC GAME CASING

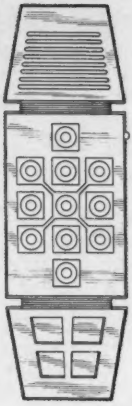
Arthur P. Venditti, Peabody; Samuel T. Kjellman, Framingham, and Robert O. Doyle, Cambridge, all of Mass., assignors to CPG Products Corp.

Filed Sep. 14, 1978, Ser. No. 942,395

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D21—1



256,140

GAME BOARD

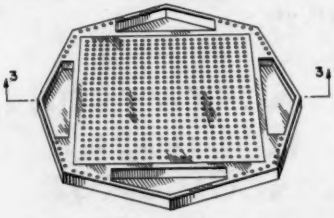
Warren H. Riley, Sr., P.O. Box 9, Agra, Okla. 74824

Filed Jul. 5, 1978, Ser. No. 922,260

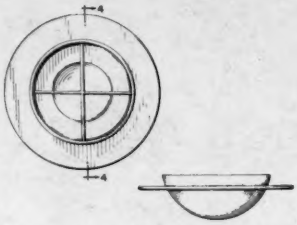
Term of patent 14 years

Int. Cl. D21—*01*

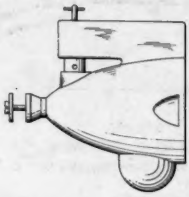
U.S. Cl. D21—17



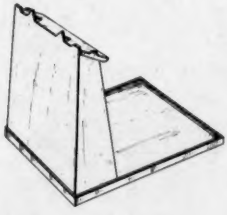
256,141
ROCKING TOY
Louise A. Lubbe, 101 Eureka Dr., Manlius, N.Y. 13104
Filed Nov. 9, 1977, Ser. No. 849,843
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—66



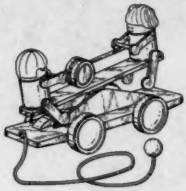
256,142
GAS PRESSURE MOTOR FOR MODEL AIRPLANE
Roy Lever, Tildesley, England, assignor to Harden Associates Limited, Bury, England
Filed Jul. 27, 1977, Ser. No. 819,266
Claims priority, application United Kingdom, Feb. 2, 1977, 978736/77
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—91



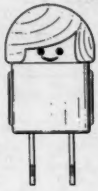
256,143
COLLAPSIBLE TOY BUILDING
Melvyn Birnkrant, Beacon, N.Y., assignor to Colorforms, Norwood, N.J.
Filed Mar. 14, 1978, Ser. No. 886,567
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—114



256,144
TETHERED ACTION TOY
John A. Pape, Clifton, England, assignor to Hilary Page "Sensible" Toys Limited, Kenley, England
Filed Mar. 22, 1978, Ser. No. 889,128
Claims priority, application United Kingdom, Dec. 28, 1978, 982740/78
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150



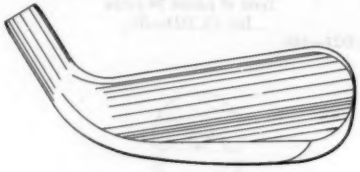
256,145
TOY FIGURE
Dennis G. Wyman, Broadstairs, England, assignor to Hilary Page "Sensible" Toys Limited, Kenley, England
Filed Jan. 24, 1978, Ser. No. 872,351
Claims priority, application United Kingdom, Dec. 2, 1977, 982468/77
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—166



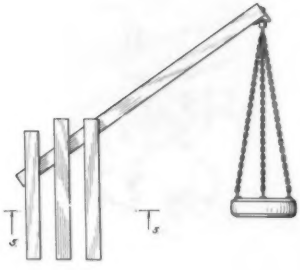
256,146
STUFFED TOY ANIMAL FIGURE
Dora Holdaway, Ontario, Canada
Filed Apr. 25, 1977, Ser. No. 790,691
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—187

256,147
GOLF CLUB HEAD
Philippe M. Jeghers, avenue Leon Souguenet 23, 4050 Esneux, Belgium
Filed Apr. 19, 1978, Ser. No. 897,948
Claims priority, application Benelux, Jan. 9, 1978, 783665-02
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—214

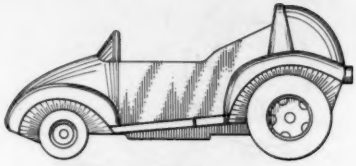
256,148
GOLF CLUB HEAD
Philippe M. Jeghers, avenue Leon Souguenet 23, 4050 Esneux, Belgium
Filed Apr. 19, 1978, Ser. No. 897,949
Claims priority, application Benelux, Jan. 9, 1978, 783665-01
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—220



256,149
RECREATION SWING
Frank W. Beller, Aurora, Ill., assignor to Recreation Systems Co., North Aurora, Ill.
Filed Jul. 31, 1978, Ser. No. 929,827
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—246

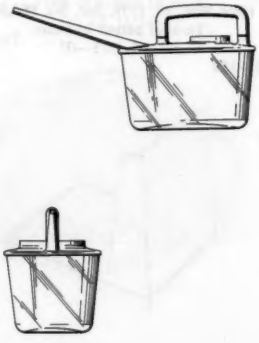


256,150
DUNE BUGGY CAR SHAPED SEAT FOR PLAYGROUND APPARATUS
Steven A. Lofton, Litchfield, and David C. Mulligan, Blissfield, both of Mich., assignors to Game Time, Inc., Fort Payne, Ala.
Filed Aug. 23, 1978, Ser. No. 936,074
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—250

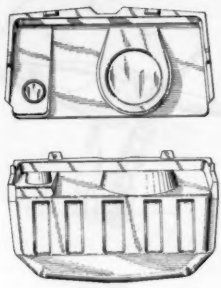


256,151
FISHING LURE
Randall L. Hunter, W. Jackson Pike Rte. #1, Box 193, Yorktown, Ind. 47396
Filed Oct. 25, 1978, Ser. No. 954,561
Term of patent 14 years
Int. Cl. D22—*28*
U.S. Cl. D22—28

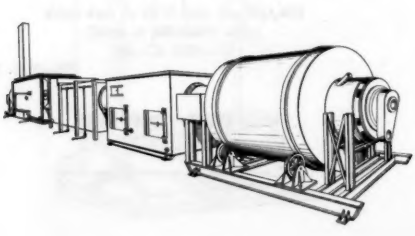
256,152
WATERING PITCHER
Arne P. Darnell, Karlshamn, Sweden, assignor to Perstorp AB, Perstorp, Sweden
Filed May 17, 1978, Ser. No. 907,248
Claims priority, application Sweden, Dec. 16, 1977, 772609
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—11



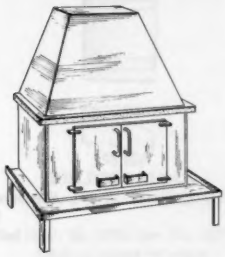
256,153
PORTABLE CHEMICAL TOILET TANK
Phillip R. Juaire, Brooklyn Center, and Leo F. Wildgen, Bloomington, both of Minn., assignors to Satellite Industries, Inc.
Filed Jul. 3, 1978, Ser. No. 921,478
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—48



256,154
WASTE INCINERATION INSTALLATION
Wayne Wills, North Palm Beach, Fla., assignor to The United Corporation, Topeka, Kans.
Filed Dec. 30, 1977, Ser. No. 865,885
Term of patent 14 years
Int. Cl. D23—*99;* D25—*03*
U.S. Cl. D23—85

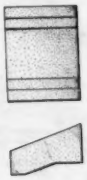


256,155
FIREPLACE
Niilo H. Teeri, Korppaantie 8 D, SF-00300 Helsinki 30, Finland
Filed Apr. 25, 1978, Ser. No. 900,024
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

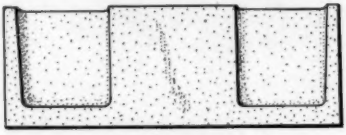


256,156
AIR INTAKE HOOD FOR A FURNACE VENTING SYSTEM
John F. Garritson, Mahtomedi, Minn., assignor to Basic Energy Conservation Services, Inc., St. Paul, Minn.
Filed Oct. 23, 1978, Ser. No. 953,974
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—151

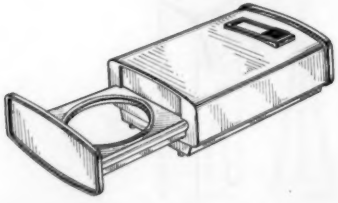
256,157
COMBINED VENT AND BAFFLE
Bruce K. Ward, St. Louis Park, Minn., assignor to Diversified Insulation, Inc., Hamel, Minn.
Division of Ser. No. 749,834, Dec. 13, 1976, Pat. No. Des. 249,704. This application Mar. 22, 1978, Ser. No. 888,947
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163



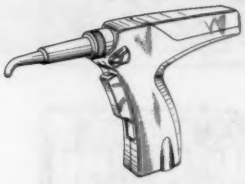
256,158
BLOCKING BAFFLE
Bruce K. Ward, St. Louis Park, Minn., assignor to Diversified Insulation, Inc., Hamel, Minn.
Filed Mar. 22, 1978, Ser. No. 889,059
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163



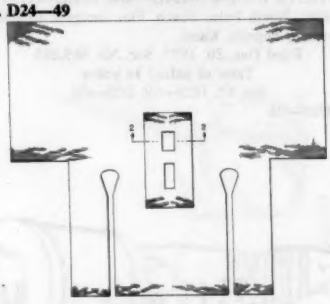
256,159
STERILIZER UNIT
Michael D. Thomas, Arab, Ala., and Francis E. Ryder, Barrington, Ill., assignors to Ryder International Corporation, Hanover Park, Ill.
Filed Mar. 3, 1978, Ser. No. 883,343
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—9



256,160
DENTAL IMPRESSION INSTRUMENT
Roy K. Fujitaki, Altadena, and Masao Morisaku, Monterey Park, both of Calif., assignors to Jack D. Rasmussen, Upland, Calif.
Filed Dec. 2, 1977, Ser. No. 857,049
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10

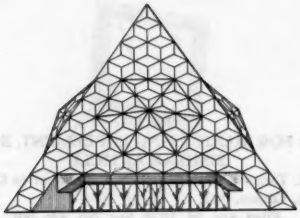


256,161
SURGICAL DRAPE
Don W. Oliver, Memphis, Tenn., assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Dec. 21, 1977, Ser. No. 862,792
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—49



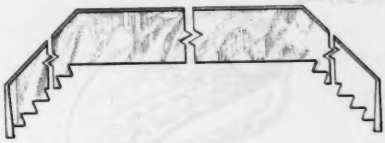
256,162
PAD FOR ANCHORING AN INFUSION NEEDLE AND THE TUBING CONNECTED THERETO TO THE SKIN OF A PATIENT
Raymond H. Haerr, Cincinnati, and Warren Bielke, Loveland, both of Ohio, assignors to Xomed, Inc.
Filed Apr. 6, 1978, Ser. No. 893,892
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—52

256,163
THEATER BUILDING
Ivan Dryer, 6911 Hayvenhurst Ave., Van Nuys, Calif. 91406
Filed Feb. 7, 1978, Ser. No. 875,877
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—26

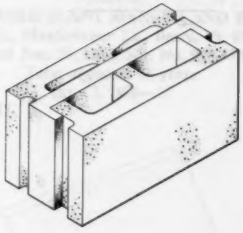


256,164
DOOR CANOPY
Marcus C. Phillips, Marietta, Ga., assignor to Plastech Corporation
Filed Jun. 7, 1978, Ser. No. 913,490
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—57

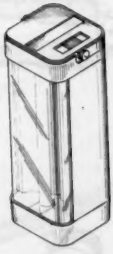
256,165
STILE
Andrew Green, Houston, Tex., assignor to Composite Technology, Inc., Fort Worth, Tex.
Filed Jun. 5, 1978, Ser. No. 912,941
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



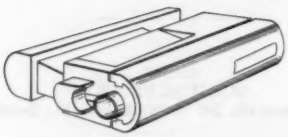
256,166
BUILDING BLOCK
Anthony N. Iannarelli, 345 N. Washington St., Belchertown, Mass. 01007
Filed Mar. 16, 1978, Ser. No. 887,195
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—87



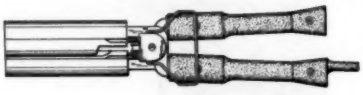
256,167
PORTABLE FLUORESCENT LAMP
Ernest F. Thomson, Fairfield, Conn., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Filed Oct. 3, 1977, Ser. No. 838,787
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—42



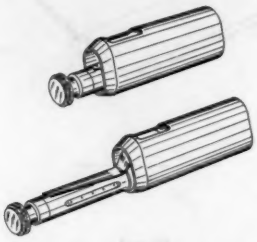
256,168
CIGARETTE MAKING MACHINE
Kevin Thompson, and David Crisp, both of London, England, assignors to Rizla Limited, Pontypridd, Wales
Filed Jun. 14, 1978, Ser. No. 916,005
Claims priority, application United Kingdom, Dec. 23, 1977, 982730/77
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D27—51



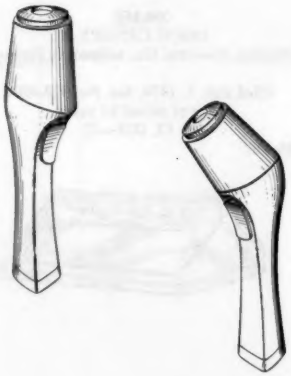
256,169
HAIR TREATMENT IRON
John Cusenza, 9660 Lurline Ave., Chatsworth, Calif. 91311
Filed Feb. 27, 1978, Ser. No. 881,886
The portion of the term of this patent subsequent to Oct. 23, 1996, has been disclaimed.
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—35



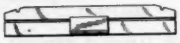
256,170
HAIR CURLING TONG
Wilhelmus G. E. Janssens, Drachten, Netherlands, assignor to U.S. Philips Corporation, Tarrytown, N.Y.
Filed Jul. 17, 1978, Ser. No. 925,406
Claims priority, application Benelux, Feb. 14, 1978, 5249200
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—35



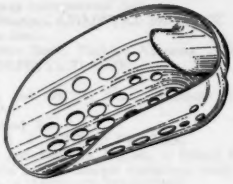
256,171
HOLDER FOR MANICURING IMPLEMENT, BRUSH OR SIMILAR ARTICLE
Patrick M. Tomaro, Maplewood, N.J., assignor to Conair Corporation, Edison, N.J.
Filed Apr. 14, 1978, Ser. No. 896,789
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—58

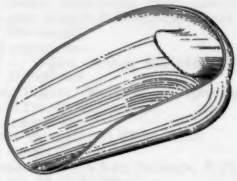


256,172
COSMETIC BOX
Alain Chevassus, Sceaux, France, assignor to Lefebure Isolants Reunis, Chevilly Larue, France
Filed Oct. 23, 1978, Ser. No. 953,778
Claims priority, application France, Apr. 24, 1978, 78 41309
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—83

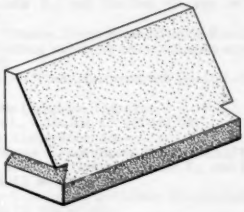


256,173
LITTER SCOOP
Jack C. Rigney, 50 Calle Del Ribera, Stinson Beach, Calif. 94970
Filed Mar. 30, 1978, Ser. No. 891,771
Term of patent 14 years
Int. Cl. D30—*99*; D7—*99*
U.S. Cl. D30—99

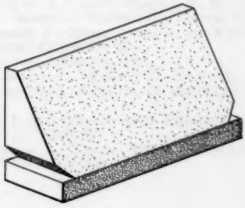




256,174
COMBINED SLANT MARKER AND BASE
John Buttura, Sr., Meadowcrest La., Barre, Vt. 05641
Filed Jun. 29, 1978, Ser. No. 920,473
Term of patent 14 years
Int. Cl. D99—*17*
U.S. Cl. D99—17



Pat 256,175
COMBINED SLANT MARKER AND BASE
John Buttura, Sr., Meadowcrest La., Barre, Vt. 05641
Filed Jun. 29, 1978, Ser. No. 920,474
Term of patent 14 years
Int. Cl. D99
U.S. Cl. D99—17



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF JULY, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A/S Modulex: *See—*
Borresen, Peter A.; and Greve, Hans J. J., 4,214,797, Cl. 312-257.00R.

A/S Pusnes Mekaniske Verksted: *See—*
Krogstad, Ivar; Sandoy, Harry S.; and Haavie, Thor O., 4,214,545, Cl. 114-294.000.

Aaron, Charles, to Midland-Ross Corporation. Belt-type printing machine with serpentine belt support. 4,214,525, Cl. 101-181.000.

Aavid Engineering, Inc.: *See—*
McCarthy, Alfred F., 4,215,361, Cl. 357-81.000.

AB Svenska Flaktfabriken: *See—*
Narfgren, Rune, 4,214,729, Cl. 251-149.200.

Abcor, Inc.: *See—*
Nuwayser, Elie S., 4,214,321, Cl. 2-167.000.

Abrams, Richard L.; and Henderson, David M., to Hughes Aircraft Company. Spatial encoding of a laser beam by means of a Stark cell modulator. 4,215,324, Cl. 332-7.510.

Abts, Leigh R., to Rhode Island Hospital. Ultrasonic particulate sensing. 4,214,484, Cl. 73-632.000.

ACF Industries, Incorporated: *See—*
Waddell, Jerry D.; Scheeter, John J.; and Stoller, David A., 4,214,536, Cl. 105-282.00P.

Ackeret Design & Engineering: *See—*
Angst, Walter, 4,214,391, Cl. 40-451.000.

Acla, Howard L.: *See—*
Ritsko, Joseph E.; Gingerich, Richard G. W.; and Acla, Howard L., 4,214,894, Cl. 75-0.5AA.

Acquaviva, Thomas, to Xerox Corporation. Sheet reversing mechanism. 4,214,740, Cl. 271-3.000.

Adachi, Takeshi; and Okamoto, Eisaku, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instruments. 4,214,500, Cl. 84-1.010.

Adams, Crestus L.: *See—*
Browning, Joe L.; and Adams, Crestus L., 4,214,439, Cl. 60-216.000.

Addor, Francis, to Ebauches S.A. Dephaser circuit. 4,215,314, Cl. 328-55.000.

Adicoff, Arnold: *See—*
Martin, Eugene C.; and Adicoff, Arnold, 4,215,046, Cl. 260-326.260.

Advanced Micro Devices, Inc.: *See—*
Brown, George W.; and Reynolds, Thomas L., 4,215,282, Cl. 307-364.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Rios, Gilbert M.; Gibert, Henri; Crouzet, Jean; and Vincent, Jean-Claude, 4,215,151, Cl. 426-467.000.

AGFA-Gevaert, A.G.: *See—*
Bartel, Siegfried; Biedermann, Ernst; Rapp, Heinz; and Muller, Martin, 4,214,689, Cl. 226-21.000.
Bruckl, Konrad; and Fryda, Georg, 4,214,733, Cl. 339-274.000.
Findeis, Gunter; Zahn, Wolfgang; and Weber, Klaus, 4,214,834, Cl. 355-46.000.
Schroder, Rolf, 4,214,830, Cl. 354-202.000.
Stemme, Otto; Lermann, Peter; Wagensonner, Eduard; and Cocron, Istvan, 4,214,824, Cl. 354-23.00D.

AGFA-GEVAERT N.V.: *See—*
De Winter, Walter F.; Timmerman, Daniel M.; De Cat, Arthur H.; and Kockelbergh, Godfried A., 4,215,196, Cl. 430-627.000.

Agins, Bonnie G. Ski pole with wind and sun shield. 4,214,770, Cl. 280-819.000.

Ahern, Ronald A.: *See—*
Labbe, Francis A. M.; Rakowicz, Jan A.; and Ahern, Ronald A., 4,214,595, Cl. 131-108.000.

Ahlen, Karl G.; Bergstrom, Per-Olof; and Supanich, Joseph, to S.R.M. Hydromekanik Aktiebolag. Multi-speed planetary gear. 4,214,489, Cl. 74-761.000.

Aiba, Takaaki: *See—*
Nakanishi, Hajime; Ozaki, Kiyoji; Shinozuka, Toshio; Izumi, Masato; Aiba, Takaaki; Kaji, Hisatsugu; Sumida, Yutaka; and Ishihara, Takao, 4,214,979, Cl. 208-128.000.

Aimar, Michele, to ITW Fastex Italia S.p.A. Bush for anchoring panel fasteners. 4,214,505, Cl. 85-55.000.

Air Industrie: *See—*
Lacchia, Adrien, 4,214,708, Cl. 239-703.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Fujimori, Fumio; Yokoi, Masatada; Ishikawa, Masakazu; Uemura, Hiroshi; and Shirai, Akira, 4,214,649, Cl. 188-73.500.
Kobayashi, Toyoaki; and Ishikawa, Masakazu, 4,214,648, Cl. 188-73.300.
Kondo, Hiroyuki, 4,214,794, Cl. 303-6.00C.

Aizawa, Koki: *See—*
Yamaguchi, Tadahiro; and Aizawa, Koki, 4,215,316, Cl. 329-50.000.

Aizawa, Tatsuo: *See—*
Nakazawa, Toru; Nagahashi, Keiichi; and Aizawa, Tatsuo, 4,214,907, Cl. 430-82.000.

Ajinomoto Company Incorporated: *See—*
Sakakibara, Shumpei, 4,215,047, Cl. 260-326.340.

Akiyama, Takuya: *See—*
Ueno, Yasuhiko; Saeki, Yoshito; Akiyama, Takuya; and Fujita, Masao, 4,214,892, Cl. 71-93.000.

Akzo N.V.: *See—*
Kunnen, Jan; and van der Schee, Abraham C., 4,215,162, Cl. 427-435.000.

Akzona Incorporated: *See—*
Franks, Neal E., 4,215,212, Cl. 536-57.000.

Alafandi, Hamid; and Stamires, Dennis, to Filtrol Corporation. Exchanged faujasite zeolite catalyst containing same and process for producing same. 4,215,016, Cl. 252-455.00Z.

Albrecht, Peter: *See—*
Kleimenhagen, Gunter; Rosenkranz, Otto; Albrecht, Peter; Conow, Hans; Kother, Holger; Schmidt, Dieter; and Vogel, Klaus, 4,214,860, Cl. 425-149.000.

Albright & Wilson Limited: *See—*
Lowe, Edward J.; Wilson, Arthur; and Minshall, Michael W., 4,215,098, Cl. 423-305.000.

Albus, Francis E.; and Fendler, George W., to Aljet Equipment Company. Flash dryer. 4,214,375, Cl. 34-10.000.

Alco Standard Corporation: *See—*
Kastilahn, William W., 4,215,233, Cl. 13-25.000.

Alexander Wiegand GmbH Co.: *See—*
Bleidt, Rolf; Nasterlack, Joachim; Neubeck, Kurt; and Gareus, Achim, 4,214,474, Cl. 73-30.000.

Alexandrov, Valery M.: *See—*
Chabanov, Alim I.; Daniljuk, Valery V.; Valeev, Dzhavit K.; Bauer, Alfrid G.; Petrov, Boris N.; Tropin, Sergei N.; Chuguev, Dmitry I.; Ivanov, Ivan V.; Braun, Georgy A.; and Alexandrov, Valery M., 4,214,464, Cl. 72-8.000.

Alfa-Laval AB: *See—*
Olander, Karl E., 4,214,552, Cl. 119-14.010.
Olander, Karl E., 4,214,553, Cl. 119-14.080.

Alfredsson, Stig A.: *See—*
Bernhardsson, Sven-Olof; and Alfredsson, Stig A., 4,214,951, Cl. 204-1.00T.

Aljet Equipment Company: *See—*
Albus, Francis E.; and Fendler, George W., 4,214,375, Cl. 34-10.000.

Allen, Fred E.; Thuener, Bruce W.; and Turpin, Ronald F., to Wheaton Industries. Collating and shrink wrap packaging apparatus. 4,214,419, Cl. 53-543.000.

Allen, James H., to 'Totes', Incorporated. Storable slippers. 4,214,383, Cl. 36-1.000.

Alliance Machine Company, The: *See—*
Polen, Karl L., 4,214,664, Cl. 212-142.100.

Allied Chemical Corporation: *See—*
Diamond, Steven E.; and Mares, Frank, 4,215,218, Cl. 546-162.000.
Hamilton, Brian K.; Garner, Eugene F.; and Jackson, Charles, 4,214,438, Cl. 60-205.000.
Otto, Julian A., deceased; and Cooke, Ermalinda O., administratrix, 4,215,140, Cl. 424-301.000.
Tuller, Harold W.; and Schulze, Stephen R., 4,215,176, Cl. 428-412.000.
Vander Mey, John E., 4,215,005, Cl. 252-153.000.
Yee, Kwok C.; Preziosi, Anthony F.; Patel, Gordhanbhai N.; Chance, Ronald R.; Miller, Granville G.; and Baughman, Ray H., 4,215,208, Cl. 526-285.000.

Allis-Chalmers Corporation: *See—*
Flaherty, Thomas W., 4,214,707, Cl. 239-553.500.

Alsthom-Atlantique: *See—*
Riollet, Gilbert; and Franconville, Gerard, 4,214,452, Cl. 60-697.000.

Alt, Viktor V.: *See—*
Bukhtiyarov, Ivan D.; Potanin, Veniamin G.; Alt, Viktor V.; Rakhmanin, Evgeny A.; Lyzlov, Vladimir M.; An, Viktor B.; Anikin, Valery P.; Koshevoi, Vladimir G.; Timonin, Nikolai G.; Zhdanov, Gennady P.; Gibert, Alfred I.; and Kolesnikov, Vladimir M., 4,215,404, Cl. 364-431.000.

Aluminum Company of America: *See—*
Bowman, Kenneth A., 4,214,955, Cl. 204-67.000.
Bowman, Kenneth A., 4,214,956, Cl. 204-67.000.

Amax Inc.: *See—*
Crnojevich, Ranko; Wiewiorowski, Edward I.; and Yu, Peter H., 4,214,900, Cl. 75-109.000.
Michal, Eugene J.; Fekete, Simon O.; and Roorda, H. Jan, 4,214,901, Cl. 75-119.000.

American Can Company: *See*—
Lemke, Harold C., 4,214,944, Cl. 156-518.000.
American Cyanamid Company: *See*—
Schmitt, Joseph L., Jr.; and Ando, Hiei, 4,215,063, Cl. 260-369.000.
American Dental Association Health Foundation: *See*—
Bowen, Rafael L., 4,215,033, Cl. 260-42.150.
American Home Products Corporation: *See*—
Sarantakis, Dimitrios, 4,215,039, Cl. 260-112.50S.
Scotese, Anthony C.; and Santilli, Arthur A., 4,215,123, Cl. 424-256.000.
Scotese, Anthony C.; Morris, Robert L.; and Santilli, Arthur A., 4,215,216, Cl. 544-117.000.
American Hospital Supply Corporation: *See*—
White, Fred K., 4,214,874, Cl. 23-230.00B.
American Optical Corporation: *See*—
Hovey, Richard J.; Chu, Nori Y. C.; Piusz, Peter G.; and Fuchsman, Charles H., 4,215,010, Cl. 252-300.000.
Ames, Adolf: *See*—
Wagner, Alfred; and Ames, Adolf, 4,214,469, Cl. 72-258.000.
Amick, James A.; Milewski, John V.; and Wright, Franklin J., to Exxon Research & Engineering Co. Method for producing solar cell-grade silicon from rice hulls. 4,214,920, Cl. 148-1.500.
AMP Incorporated: *See*—
Coldren, Daniel R.; and Marley, James E., 4,214,361, Cl. 29-863.000.
Hollyday, Robert D.; and McKinnon, Wayne E., 4,214,800, Cl. 339-45.00M.
Hollyday, Robert D., 4,215,326, Cl. 333-182.000.
Ampex Corporation: *See*—
Ravizza, Raymond F., 4,215,362, Cl. 358-8.000.
Amundsen, Paul D. Grill cleaning tool. 4,214,342, Cl. 15-236.00R.
An, Viktor B.: *See*—
Bukhtiyarov, Ivan D.; Potanin, Veniamin G.; Alt, Viktor V.; Rakhmanin, Evgeny A.; Lyzlov, Vladimir M.; An, Viktor B.; Anikin, Valery P.; Koshevoi, Vladimir G.; Timonin, Nikolai G.; Zhdanov, Gennady P.; Gibert, Alfred I.; and Kolesnikov, Vladimir M., 4,215,404, Cl. 364-431.000.
Anders, Dietmar, to Hermann Berstorff Maschinenbau GmbH. Apparatus for regulating the output of a single or twin screw extruder for processing plastics melts. 4,214,859, Cl. 425-147.000.
Anderson Company of Indiana, The: *See*—
Dudek, Dennis A., 4,214,343, Cl. 15-250.320.
Anderson, Stanley J. Suspended drilling system. 4,214,639, Cl. 173-43.000.
Ando, Hiei: *See*—
Schmitt, Joseph L., Jr.; and Ando, Hiei, 4,215,063, Cl. 260-369.000.
Ang, Peter G. P.; and Sammells, Anthony F., to Institute of Gas Technology. Conversion of solar energy to chemical and electrical energy. 4,215,182, Cl. 429-15.000.
Angst, Walter, to Ackeret Design & Engineering. Optical numerical segment display. 4,214,391, Cl. 40-451.000.
Anikin, Valery P.: *See*—
Bukhtiyarov, Ivan D.; Potanin, Veniamin G.; Alt, Viktor V.; Rakhmanin, Evgeny A.; Lyzlov, Vladimir M.; An, Viktor B.; Anikin, Valery P.; Koshevoi, Vladimir G.; Timonin, Nikolai G.; Zhdanov, Gennady P.; Gibert, Alfred I.; and Kolesnikov, Vladimir M., 4,215,404, Cl. 364-431.000.
Annenkova, Valentina M.: *See*—
Voronkov, Mikhail G.; Platonova, Ada T.; Annenkova, Vladislava Z.; Kononchuk, Galina M.; Kazimirovskaya, Valentina B.; Ugrjumova, Galina S.; and Annenkova, Valentina M., 4,215,106, Cl. 424-81.000.
Annenkova, Vladislava Z.: *See*—
Voronkov, Mikhail G.; Platonova, Ada T.; Annenkova, Vladislava Z.; Kononchuk, Galina M.; Kazimirovskaya, Valentina B.; Ugrjumova, Galina S.; and Annenkova, Valentina M., 4,215,106, Cl. 424-81.000.
Ansteth, John H.: *See*—
Hardwicke, Robert L.; and Ansteth, John H., 4,214,792, Cl. 301-36.00R.
Anthony, William H., to Swiss Aluminium Ltd. Method and apparatus for continuous electrochemical treatment of a metal web. 4,214,961, Cl. 204-140.000.
Antonova, Nina V.: *See*—
Sokolov, Igor D.; Ostanina, Vera A.; Safrygin, Jury S.; Rutkovskaya, Tatyana I.; Antonova, Nina V.; and Naginskaya, Rakhil E., 4,215,100, Cl. 423-552.000.
Anzai, Makoto: *See*—
Nishioka, Tetsuji; Asano, Masaharu; Anzai, Makoto; and Hosaka, Akio, 4,214,558, Cl. 123-489.000.
Aoike, Nanjou: *See*—
Inui, Kenichi; Kobayashi, Hisao; and Aoike, Nanjou, 4,215,292, Cl. 315-98.000.
Applequist, Roy E., to Great Plains Manufacturing Incorporated. Elevation altering structure for agricultural implements. 4,214,637, Cl. 172-484.000.
Appliance Design Probe Inc.: *See*—
Hetherington, Michael W., 4,215,264, Cl. 219-225.000.
Arai, Yoshinobu: *See*—
Hayashi, Masaki; Shimoji, Katsuichi; and Arai, Yoshinobu, 4,215,142, Cl. 424-305.000.
Araki, Tamio: *See*—
Ogawa, Masaki; Araki, Tamio; and Yamamoto, Shinji, 4,215,021, Cl. 260-5.000.
Arbeletche, Carlos: *See*—
Kriegel, Ernst; Radke, Dietrich; Klein, Hans; and Arbeletche, Carlos, 4,215,101, Cl. 423-659.000.
Ardary, Zane L.; and Reynolds, Carl D., to United States of America, Energy. Method for fabricating boron carbide articles. 4,215,088, Cl. 264-332.000.
ARES, Inc.: *See*—
Stoner, Eugene M., 4,214,332, Cl. 9-6.00M.
Arfaa, Manoochehr. Surgical wash system. 4,214,583, Cl. 128-214.00F.
Arita, Koji; Chiji, Masahiro; Asami, Takayoshi; Karaki, Yasuhumi; and Endo, Toshihiko, to Kobe Steel, Limited. Method for fabricating brazed aluminum fin heat exchangers. 4,214,925, Cl. 148-127.000.
Ariyama, Kenzo: *See*—
Kono, Masao; Tani, Tatsuo; Ogawa, Toshiyuki; and Ariyama, Kenzo, 4,214,832, Cl. 355-8.000.
Arnold, Carter H. Method and apparatus for cleaning teeth and removing plaque. 4,214,871, Cl. 433-216.000.
Arrington, Jack P.; and Wade, Luke L., to Dow Chemical Company, The. Method for the control of manure-breeding insects. 4,215,129, Cl. 424-272.000.
Arrowhead Enterprises, Inc.: *See*—
Mudge, Philip H.; Settanni, Richard; and Kahl, William G., Jr., 4,215,271, Cl. 250-216.000.
Arthur D. Little, Inc.: *See*—
Young, Niels O., 4,214,483, Cl. 73-518.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Inoko, Michio; Kawatsuji, Shinichi; Matsui, Toshiie; and Yoshida, Shuu, 4,214,942, Cl. 156-500.000.
Ogawa, Shinsaku; and Kanke, Tsutomu, 4,214,957, Cl. 204-98.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Negishi, Kiyoshi; and Miyata, Katsuhiko, 4,215,387, Cl. 361-398.000.
Asami, Takayoshi: *See*—
Arita, Koji; Chiji, Masahiro; Asami, Takayoshi; Karaki, Yasuhumi; and Endo, Toshihiko, 4,214,925, Cl. 148-127.000.
Asano, Masaharu: *See*—
Nishioka, Tetsuji; Asano, Masaharu; Anzai, Makoto; and Hosaka, Akio, 4,214,558, Cl. 123-489.000.
Ashland Oil, Inc.: *See*—
Hanesworth, Richard F.; Kim, Young D.; and Tolhurst, Gary A., 4,215,206, Cl. 525-441.000.
Astafiev, Anatoly A.: *See*—
Balandin, Jury F.; Badanin, Vladimir I.; Gorynin, Igor V.; Gluskin, Lev Y.; Zvezdin, Jury I.; Nikolaev, Vladimir A.; Parshin, Anatoly M.; Zorev, Nikolai N.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Markov, Sergei I.; Sobolev, Jury V.; and Kozlov, Valentin I., 4,214,950, Cl. 176-87.000.
Astra Lakemedel Aktiebolag: *See*—
Eriksson, Bertil F. H.; Helgstrand, Ake J. E.; Misiorny, Alfons; Stening, Goran B.; and Stridh, Stig-Ake A., 4,215,113, Cl. 424-212.000.
Astrom, Brik J. H. Device for use in connection with tapping off fluid from or filling fluid into a container. 4,214,599, Cl. 137-15.000.
Atari, Inc.: *See*—
Tuma, Wade B.; and Strohl, Niles E., 4,214,360, Cl. 29-829.000.
Ateliers des Charmilles S.A.: *See*—
Briffod, Jean-Paul, 4,215,261, Cl. 219-69.00V.
Ateliers et Chantiers de Bretagne—A.C.B.: *See*—
Le Garfe, Roger J.; Pignal, Edmond; and Magloire, Charles J., 4,214,692, Cl. 228-44.10R.
Atlantic Research Corporation: *See*—
Kromrey, Robert V., 4,214,875, Cl. 44-6.000.
Atlantic Richfield Company: *See*—
Moore, Thomas F., 4,214,791, Cl. 299-4.000.
Atsugi Motor Parts Co.: *See*—
Yamanaka, Shogo; and Kouda, Masanori, 4,214,643, Cl. 180-148.000.
Avco Corporation: *See*—
Wade, James; and Jewett, Charles S., 4,214,457, Cl. 64-4.000.
Avid Corporation: *See*—
Plourde, Richard G., 4,214,645, Cl. 181-148.000.
Axelrod, Donald J., to Bell & Howell Company. Web cassette with cartridge load. 4,214,828, Cl. 354-275.000.
Axen, Udo F., to Upjohn Company, The. 6-Keto prostaglandin derivatives. 4,215,222, Cl. 560-53.000.
B. F. Goodrich Company, The: *See*—
Bowerman, Harold H., Jr.; and Ireland, Robert W., 4,214,619, Cl. 152-347.000.
Horr, Arthur N.; and Landsness, Clifford A., 4,214,941, Cl. 156-414.000.
Tucker, Harold A, 4,215,175, Cl. 428-375.000.
Bacher, Eric, to Hermes Precisa International S.A. Disc printers. 4,214,837, Cl. 400-144.300.
Badanin, Vladimir I.: *See*—
Balandin, Jury F.; Badanin, Vladimir I.; Gorynin, Igor V.; Gluskin, Lev Y.; Zvezdin, Jury I.; Nikolaev, Vladimir A.; Parshin, Anatoly M.; Zorev, Nikolai N.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Markov, Sergei I.; Sobolev, Jury V.; and Kozlov, Valentin I., 4,214,950, Cl. 176-87.000.
Baggett, Richard S.; and Bumpas, Carl E., to Rockwell International Corporation. Front porch clamping circuit. 4,215,371, Cl. 358-172.000.
Bailey, Alfred J.; and Sargent, Ronald S., to Massey-Ferguson Services N.V. Grain drill furrow opening assembly. 4,214,537, Cl. 111-85.000.
Bailey, Paul F., Jr. Tool for surgical implantation of an intraocular lens. 4,214,585, Cl. 128-303.00R.

Baird Corporation: *See*—
Roos, Cees J., 4,214,835, Cl. 356-306.000.
Balandin, Jury F.; Badanin, Vladimir I.; Gorynin, Igor V.; Gluskin, Lev Y.; Zvezdin, Jury I.; Nikolaev, Vladimir A.; Parshin, Anatoly M.; Zorev, Nikolai N.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Markov, Sergei I.; Sobolev, Jury V.; and Kozlov, Valentin I. Steel for nuclear applications. 4,214,950, Cl. 176-87.000.
Balko, Edward N.: *See*—
Coker, Thomas G.; LaConti, Anthony B.; Balko, Edward N.; and McGray, George B., 4,214,958, Cl. 204-98.000.
Ballard, James W.; and Ballard, Larry R. One-piece roof vent device and methods of constructing and utilizing same. 4,214,513, Cl. 98-42.00R.
Ballard, Larry R.: *See*—
Ballard, James W.; and Ballard, Larry R., 4,214,513, Cl. 98-42.00R.
Banucci, Eugene G.: *See*—
Boldebuck, Edith M.; and Banucci, Eugene G., 4,215,157, Cl. 427-116.000.
Baram, Martin. Valve apparatus. 4,214,727, Cl. 251-63.400.
Baranowski, Boleslaw; and Baranowski, William. Apparatus for taking up and removing matter from a surface. 4,214,385, Cl. 37-130.000.
Baranowski, William: *See*—
Baranowski, Boleslaw; and Baranowski, William, 4,214,385, Cl. 37-130.000.
Barbier, Daniel; Lancre, Jean C.; Lauwick, Bernard; and Poujois, Robert, to Commissariat a l'Energie Atomique; and Compagnie Centrale SICLI. Detector for abnormal phenomena. 4,215,278, Cl. 307-116.000.
Barrow, Billy E. Injector cooler controls. 4,214,453, Cl. 62-118.000.
Bartel, Siegfried; Biedermann, Ernst; Rapp, Heinz; and Muller, Martin, to AGFA-Gevaert, A.G. Automatic counteracting of transverse shift of a longitudinally transported strip. 4,214,689, Cl. 226-21.000.
Barton, David W., to Ford Motor Company. Dual-crank Stirling engine with quad cylinder arrangement. 4,214,447, Cl. 60-525.000.
Barton, Paul R.; and Welborn, Johnnie M., to Container Corporation of America. Container with integral partition. 4,214,696, Cl. 229-40.000.
Bartsch, Wolfgang: *See*—
Ross, Carl H.; Friebe, Walter-Gunar; Kampe, Wolfgang; Bartsch, Wolfgang; and Roesch, Egon, 4,215,134, Cl. 424-273.00B.
Barylski, Gary S. Panel holder and fastener for home, commercial and industrial use. 4,214,412, Cl. 52-169.120.
BASF Wyandotte Corp.: *See*—
Login, Robert B., 4,215,026, Cl. 260-292.00E.
Bateman, Charles D., to Sundstrand Data Control, Inc. Aircraft excessive descent rate warning system. 4,215,334, Cl. 340-27.0AT.
Battaglia, Charles J.; Chang, Jack C.; and Daniel, Daniel S., to Eastman Kodak Company. Ion-selective electrode. 4,214,968, Cl. 204-195.00M.
Battelle Development Corporation, The: *See*—
Maringer, Robert E., 4,215,084, Cl. 264-8.000.
Battle, Dick M.: *See*—
Battle, Dick R.; and Battle, Dick M., 4,214,421, Cl. 54-79.000.
Battle, Dick R.; and Battle, Dick M. Horse blanket and hood apparatus. 4,214,421, Cl. 54-79.000.
Bauer, Alfrid G.: *See*—
Chabanov, Alim I.; Daniljuk, Valery V.; Valeev, Dzhavit K.; Bauer, Alfrid G.; Petrov, Boris N.; Tropin, Sergei N.; Chuguev, Dmitry I.; Ivanov, Ivan V.; Braun, Georgy A.; and Alexandrov, Valery M., 4,214,464, Cl. 72-8.000.
Bauer, Daniel; and Braque, Gerard, to L'Oreal. Spray dispensing container. 4,214,677, Cl. 222-145.000.
Baughman, Ray H.: *See*—
Yee, Kwok C.; Preziosi, Anthony F.; Patel, Gordhanbhai N.; Chance, Ronald R.; Miller, Granville G.; and Baughman, Ray H., 4,215,208, Cl. 526-285.000.
Baum, Kurt; and Berkowitz, Philip T., to United States of America, Navy. 2-Fluoro-2-nitropropanediol. 4,215,228, Cl. 568-712.000.
Baumann, Hans D. Chemically inert control valve. 4,214,730, Cl. 251-171.000.
Baumgart, Wolfgang, to Dynamidon-Koppers Industriekeramik GmbH. Process for the production of products from naturally-occurring magnesium orthosilicate-rich rocks. 4,214,910, Cl. 106-58.000.
Bayer Aktiengesellschaft: *See*—
Blank, Heinz U.; and Pfister, Theodor, 4,215,071, Cl. 260-543.00R.
Fuchs, Rainer; Hammann, Ingeborg; and Stendel, Wilhelm, 4,215,141, Cl. 424-304.000.
Kramer, Wolfgang; Buchel, Karl H.; Plempel, Manfred; and Haller, Ingo, 4,215,131, Cl. 424-273.00R.
Lantzsch, Reinhard, 4,215,050, Cl. 260-343.600.
Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; and Homeyer, Bernhard, 4,215,132, Cl. 424-273.00P.
Petersen, Otto; and Kersten, Franz, 4,215,091, Cl. 422-75.000.
Preiss, Michael; Konig, Hans-bodo; Metzger, Karl G.; and Feyen, Peter, 4,215,118, Cl. 424-248.400.
Bayer, Robert C.: *See*—
Rittenburg, James H.; and Bayer, Robert C., 4,215,108, Cl. 424-92.000.
BBC Brown, Boveri & Co., Ltd.: *See*—
Bleidt, Rolf; Nasterlack, Joachim; Neubeck, Kurt; and Gareus, Achim, 4,214,474, Cl. 73-30.000.
Romeyke, Norbert; and Kalbfuss, Richard, 4,214,436, Cl. 60-39.09R.
Beach, Corbett D., Jr. Pivoting wall type, four stroke, internal combustion, rotary engine. 4,214,557, Cl. 123-18.00R.
Beales, John H., to J. H. Beales Steel Fabricators, Ltd. Quick-release coupler. 4,214,840, Cl. 403-31.000.
Beard, James H., to Production Engineering Research Association of Great Britain. Gripping means. 4,214,362, Cl. 29-726.000.
Beaston, Bud A. Hoof alignment tool. 4,214,370, Cl. 33-195.000.
Beckman Instruments, Inc.: *See*—
Corwin, William C., 4,215,352, Cl. 346-140.00R.
Beckmann, Gerhard. Irrigation valve device. 4,214,701, Cl. 239-63.000.
Beecham Group Limited: *See*—
Ferres, Harry, 4,215,120, Cl. 424-250.000.
Howarth, Thomas T., 4,215,128, Cl. 424-272.000.
Beentjes, Nicolaas H. M., to Hoogovens IJmuiden, B.V. Pressure measurement in a hood above a converter for manufacturing steel. 4,214,735, Cl. 266-99.000.
Behensky, Gerhard; and Waldinger, Josef, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Process for producing semiconductor materials and metals of highest purity. 4,215,154, Cl. 427-50.000.
Behn, Reinhard; Hoyler, Gerhard; and Voelkl, Walter, to Siemens Aktiengesellschaft. Regenerable electric capacitor. 4,215,385, Cl. 361-273.000.
Belart, Juan, to ITT Industries, Inc. Hydraulic brake booster. 4,214,448, Cl. 60-547.00R.
Belkin, Nathan L., to Superior Surgical Mfg. Co., Inc. Surgical gown and method of donning gown. 4,214,320, Cl. 2-114.000.
Bell & Howell Company: *See*—
Axelrod, Donald J., 4,214,828, Cl. 354-275.000.
Bell Telephone Laboratories, Incorporated: *See*—
Bellisio, Jules A., 4,215,245, Cl. 370-84.000.
Chang, Tao-Yuan, 4,215,320, Cl. 331-94.50G.
Heisinger, Robert F., 4,215,381, Cl. 361-124.000.
Kahng, Dawon, 4,214,359, Cl. 29-571.000.
Mahoney, Gerard E., 4,214,966, Cl. 204-192.00E.
McCall, Samuel L., Jr., 4,215,323, Cl. 332-7.510.
Sawyer, Albert J., 4,215,246, Cl. 179-18.00B.
Bellisio, Jules A., to Bell Telephone Laboratories, Incorporated. Variable rate synchronous digital transmission system. 4,215,245, Cl. 370-84.000.
Bemis Company, Inc.: *See*—
Lieder, Gaylerd M., 4,214,417, Cl. 53-371.000.
Benczur-Urmossy, Gabor: *See*—
Gutmann, Gunter; and Benczur-Urmossy, Gabor, 4,215,184, Cl. 429-101.000.
Bendix Corporation, The: *See*—
Cunningham, Joseph A., 4,214,651, Cl. 188-251.00R.
Benoit, Pierre A.; and Widmer, Gilbert, to Ste. d'Exploitation des Cables Electriques, Systeme Berthoud, Borel & Cie.; S.A. des Cableries & Trefileries de Cossonay; and Kabelwerke, Brugg A.G. Optical fibre connector. 4,214,811, Cl. 350-96.210.
Berger, Paul J.; and Shane, Ronald F., to Berger, Paul J. Electromechanical transducer. 4,214,485, Cl. 73-655.000.
Berger, Pierre, to Creusot-Loire. Process for the continuous impregnation of a cellulosic material. 4,214,947, Cl. 162-18.000.
Berger, Sidney; and Cubieta, John J., to United Utensils Company, Inc. Method for rotationally molding a hollow article and article made thereby. 4,214,670, Cl. 220-70.000.
Bergman, Bertil N. Foldable first-aid dressings with equal bandage and compress widths. 4,214,581, Cl. 128-155.000.
Bergstrom, Per-Olof: *See*—
Ahlen, Karl G.; Bergstrom, Per-Olof; and Supanich, Joseph, 4,214,489, Cl. 74-761.000.
Bergum, Bernard C.; Bredland, Alf M.; and Paulson, John W., to ESB Inc. Electrochemical battery employing a latex bonded lead dioxide electrode. 4,215,189, Cl. 429-217.000.
Berkowitz, Philip T.: *See*—
Baum, Kurt; and Berkowitz, Philip T., 4,215,228, Cl. 568-712.000.
Berman, Alby M.: *See*—
Galloway, James H.; and Berman, Alby M., 4,215,394, Cl. 363-137.000.
Bernham, Robert R.; and Christy, Harold, to Cogar, George R. Article handling apparatus especially useful for handling concrete blocks. 4,214,655, Cl. 198-374.000.
Bernhardsson, Sven-Olof; and Alfredsson, Stig A. Method and apparatus for determining critical temperatures for corrosion. 4,214,951, Cl. 204-1.00T.
Bernhardt, Wolfgang, to Robert Bosch GmbH. Hydraulic control arrangement with at least one multiple position valve. 4,214,506, Cl. 91-527.000.
Bernier, Joseph L.; and Kamber, Peter W., to Boeing Company, The. Real time performance monitoring of gas turbine engines. 4,215,412, Cl. 364-551.000.
Bertsch, Josef: *See*—
Katz, Sol; Bertsch, Josef; and Yurgevich, Howard J., 4,214,789, Cl. 296-183.000.
Bettin, Leonard A., to International Harvester Company. Pressure-flow compensated hydraulic priority system providing signals controlling priority valve. 4,214,446, Cl. 60-420.000.
Betts, Robert K., to United States of America, Air Force. Fretting fatique inhibiting method for titanium. 4,215,181, Cl. 428-591.000.
Bexford Limited: *See*—
Kwok, John C., 4,215,191, Cl. 430-152.000.
Biche, Barton A., to Bunker Ramo Corporation. Movable and prewired wall structure. 4,214,799, Cl. 339-20.000.
Biedermann, Ernst: *See*—
Bartel, Siegfried; Biedermann, Ernst; Rapp, Heinz; and Muller, Martin, 4,214,689, Cl. 226-21.000.

Bigley William J.; and Rizzo, Vincent J., to Lockheed Electronics Co., Inc. Servomechanism rate control system with compensation for motor-tachometer resonance. 4,215,298, Cl. 318-327.000.

Bille, Dag, to Svecia Silkscreen Maskiner AB. Device for manufacturing a stencil. 4,214,522, Cl. 101-128.400.

Binks Manufacturing Company: *See*—
Scull, Jon V.; and Shaffer, Patrick D., 4,214,709, Cl. 239-707.000.

Bissell, Robert D.: *See*—
Gorgens, Joseph E.; Kipp, Frederick M.; and Bissell, Robert D., 4,214,486, Cl. 73-738.000.

Bitterli, William W.: *See*—
Games, John E.; and Bitterli, William W., 4,215,408, Cl. 364-505.000.

Black, Otis D.: *See*—
Packer, Marvin; and Black, Otis D., 4,215,025, Cl. 260-29.20R.

Blackman, Joel: *See*—
McKibbin, Dean K.; Hills, Richard E.; Blackman, Joel; and Kuhs, Franklin A., 4,214,671, Cl. 220-219.000.

Blackmon, Charles V., to Blackmon Enterprises, Inc. Spring-biased exercise apparatus. 4,214,748, Cl. 272-67.000.

Blackmon Enterprises, Inc.: *See*—
Blackmon, Charles V., 4,214,748, Cl. 272-67.000.

Blanchard, Stanley J., to Unimation Inc. Dual-disc shaft position encoder. 4,215,337, Cl. 340-347.00P.

Blanco, Jose R.; and Venero, Aurelio O., to Garcia de Lama, Javier. Process for the preparation of substituted 4H-pyran-4-ones. 4,214,963, Cl. 204-158.00R.

Blank, Heinz U.; and Pfister, Theodor, to Bayer Aktiengesellschaft. Process for the preparation of sulphonic acid chlorides. 4,215,071, Cl. 260-543.00R.

Blatt, Leland F. Adjustable shock absorber including metering pin and reservoir structure. 4,214,737, Cl. 267-8.00A.

Bleidt, Rolf; Nasterlack, Joachim; Neubeck, Kurt; and Gareus, Achim, to BBC Brown, Boveri & Co., Ltd.; and Alexander Wiegand GmbH Co. Density monitoring apparatus. 4,214,474, Cl. 73-30.000.

Block Drug Company Inc.: *See*—
Lover, Myron J.; Singer, Arnold J.; and Lynch, Donald M., 4,215,116, Cl. 424-217.000.

Blount, David H. Process for the production of poly(amine allyl halide) copolymer and their reaction products. 4,215,203, Cl. 521-189.000.

Blumbergs, John H.: *See*—
Finley, Joseph H.; and Blumbergs, John H., 4,215,003, Cl. 252-99.000.

Blumhof, Roy, to Joy Insignia, Inc. Decorative key ring and method for making same. 4,214,463, Cl. 70-456.00R.

Boardman, Franklin: *See*—
Gianakakos, Spiros; and Boardman, Franklin, 4,214,578, Cl. 128-90.000.

Bobard, Charles E.; Dalaunay, Just M.; and Darcy, Raymond M., to Establissments Bobard Jeune. Mechanical grape harvesting device. 4,214,427, Cl. 56-330.000.

Bobo, Melvin: *See*—
Monzel, Fred J.; and Bobo, Melvin, 4,214,796, Cl. 308-26.000.

Bobst-Champlain, Inc.: *See*—
Stern, Nathan, 4,214,943, Cl. 156-504.000.

Bockrath, Richard E., to Du Pont de Nemours, E. I., and Company. Recovery of para-nitrosodium phenolate. 4,215,227, Cl. 568-706.000.

Bodenrader, Bonnie J. Method for sewage treatment with bacteria. 4,214,985, Cl. 210-11.000.

Boegeman, Arthur V. Positive locking device. 4,214,783, Cl. 292-150.000.

Boehme, Herman F.; Srivastav, Avadhesh N. L.; and Lochridge, Joe C., to Brown & Root, Inc. Trenching apparatus and method. 4,214,387, Cl. 37-195.000.

Boehringer Ingelheim GmbH: *See*—
Mentrup, Anton; Schromm, Kurt; Renth, Ernst-Otto; Reichl, Richard; Traunecker, Werner; and Hoefke, Wolfgang, 4,215,119, Cl. 424-248.500.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,215,133, Cl. 424-273.00R.

Boehringer Mannheim GmbH: *See*—
Ross, Carl H.; Friebe, Walter-Gunar; Kampe, Wolfgang; Bartsch, Wolfgang; and Roesch, Egon, 4,215,134, Cl. 424-273.00B.

Boeing Company, The: *See*—
Bernier, Joseph L.; and Kamber, Peter W., 4,215,412, Cl. 364-551.000.
James, Varnell L.; and Evelyn, George B., 4,214,610, Cl. 137-597.000.

Bogdanov, Alexandr A.: *See*—
Kolpakov, Serafim V.; Gurkov, Zinovy L.; Bondarenko, Oleg L.; Valtsov, Vladimir V.; Pozhivanov, Alexandr M.; Gugnin, Eduard D.; Radilov, Stanislav V.; and Bogdanov, Alexandr A., 4,214,856, Cl. 425-60.000.

Bohle, Josef: *See*—
Broch, Eberhard, 4,214,785, Cl. 294-64.00R.

Boissevain, Thomas A.: *See*—
Prager, Jay M.; Sadlow, Joseph F.; Farrand, John E.; Boissevain, Thomas A.; and Gonzales, Roman Y., 4,215,386, Cl. 361-394.000.

Boldebuck, Edith M.; and Banucci, Eugene G., to General Electric Company. Process for preparing polyetherimide coatings. 4,215,157, Cl. 427-116.000.

Bolhofer, William A., to Merck & Co., Inc. Pyrazine substituted ureas. 4,215,121, Cl. 424-250.000.

Bollag, Didier. Outerwear garment article. 4,214,319, Cl. 2-108.000.

Bollag, Werner; Ruegg, Rudolf; and Ryser, Gottlieb, to Hoffmann-La Roche Inc. 9-Phenyl-nonate traene compounds. 4,215,215, Cl. 542-427.000.

Bondarenko, Oleg L.: *See*—
Kolpakov, Serafim V.; Gurkov, Zinovy L.; Bondarenko, Oleg L.; Valtsov, Vladimir V.; Pozhivanov, Alexandr M.; Gugnin, Eduard D.; Radilov, Stanislav V.; and Bogdanov, Alexandr A., 4,214,856, Cl. 425-60.000.

Boogerd, Gert M.: *See*—
De Hair, Johannes T. W.; and Boogerd, Gert M., 4,215,289, Cl. 313-486.000.

Booth, Raymond E.; and Miller, Michael E., to Sam Stein Associates, Inc. Apparatus for pre-dusting food products. 4,214,548, Cl. 118-18.000.

Borden, George W.; Smith, Oliver W.; and Trecker, David J., to Union Carbide Corporation. Ink and coating compositions and method. 4,215,167, Cl. 428-203.000.

Borgerding, James F.; and Claus, Robert T., to Chemed Corporation. Slurried laundry detergent. 4,215,004, Cl. 252-156.000.

Borlaug, David J., to GTE Products Corporation. Gated, variable-gain amplifier. 4,215,363, Cl. 358-21.00R.

Borresen, Peter A.; and Greve, Hans J. J., to A/S Modulex. Case structure. 4,214,797, Cl. 312-257.00R.

Botez, Dan, to RCA Corporation. Single filament semiconductor laser. 4,215,319, Cl. 331-94.50H.

Botts, Elton M. Multiple-purpose underground fluid injection system. 4,214,628, Cl. 166-75.00R.

Bouchard, John R., to Northrop Corporation. Inertial instrument. 4,214,482, Cl. 73-504.000.

Bourne, Richard G.: *See*—
Buddemeyer, Bruce D.; Neville, William A.; Rozzo, Nancy A.; and Bourne, Richard G., 4,214,996, Cl. 252-1.000.

Bouteille, Daniel, to Societe Anonyme: La Telemecanique Electrique. Unidirectional flow limiter. 4,214,607, Cl. 137-499.000.

Bowen, Rafael L., to American Dental Association Health Foundation. Composite dental material. 4,215,033, Cl. 260-42.150.

Bowerman, Harold H., Jr.; and Ireland, Robert W., to B. F. Goodrich Company, The. Puncture-sealing tire. 4,214,619, Cl. 152-347.000.

Bowman, Kenneth A., to Aluminum Company of America. Electrolytic purification of metals. 4,214,955, Cl. 204-67.000.

Bowman, Kenneth A., to Aluminum Company of America. Electrolytic purification of metals. 4,214,956, Cl. 204-67.000.

Bowser, George H., to PPG Industries, Inc. Multiple glazed unit. 4,215,164, Cl. 428-34.000.

Boyd, Robert L.; and Fleming, Joseph W., to Ramsey Controls, Inc. Current regulator for DC motors including sensitivity control means therefor. 4,215,383, Cl. 361-210.000.

Boyer, Bernard. Cover latch. 4,214,782, Cl. 292-87.000.

Boyer, Winston. Dispensing apparatus for adding colloidal magnesium to fuel tank. 4,214,615, Cl. 141-363.000.

Boyle, Daniel J.: *See*—
Jaeschke, Harold R.; and Boyle, Daniel J., 4,214,659, Cl. 206-365.000.
Patmore, Thomas R.; and Boyle, Daniel J., 4,214,400, Cl. 43-121.000.

Bradley, Arthur: *See*—
Felsher, Hal C.; Pollak, Fred H.; and Bradley, Arthur, 4,214,916, Cl. 136-89.0SJ.

Bradley, Ross. Animal trap. 4,214,399, Cl. 43-66.000.

Brandt, Ivan L., to J. W. Speaker Corporation. Warning light. 4,215,390, Cl. 362-311.000.

Brangenberg, Egidius. Ski safety device. 4,214,769, Cl. 280-817.000.

Brannen, Cecil G.; and Petrellis, Nicolas C., to Standard Oil Company (Indiana). Process for the preparation of zinc salts of dihydrocarbyldithiophosphoric acids. 4,215,067, Cl. 260-429.900.

Braque, Gerard: *See*—
Bauer, Daniel; and Braque, Gerard, 4,214,677, Cl. 222-145.000.

Brastow, Carl H., to Conceptual Engineering. Automatic percussion welding apparatus with stud feed. 4,215,262, Cl. 219-95.000.

Braun, Georgy A.: *See*—
Chabanov, Alim I.; Daniljuk, Valery V.; Valeev, Dzhavit K.; Bauer, Alfrid G.; Petrov, Boris N.; Tropin, Sergei N.; Chuguev, Dmitry I.; Ivanov, Ivan V.; Braun, Georgy A.; and Alexandrov, Valery M., 4,214,464, Cl. 72-8.000.

Brauner, Hans-Joachim: *See*—
Upmeier, Hartmut; Schmidt, Horst; and Brauner, Hans-Joachim, 4,214,934, Cl. 156-244.110.

Braunling: *See*—
Kaufmann, Rudolf; Braunling; Haberle, Norman; and Muller, Reinhard, 4,215,057, Cl. 260-347.500.

Bredland, Alf M.: *See*—
Bergum, Bernard C.; Bredland, Alf M.; and Paulson, John W., 4,215,189, Cl. 429-217.000.

Brenholt, David L., to Donaldson Company, Inc. Portable air filter assembly with pulse jet self-cleaning filters. 4,214,882, Cl. 55-302.000.

Breslow, Jeffrey D.: *See*—
Kulesza, Ralph J.; and Breslow, Jeffrey D., 4,214,749, Cl. 273-1.00R.

Breuning, Paul: *See*—
Schermer, Gijsbertus J. H.; and Breuning, Paul, 4,215,359, Cl. 357-70.000.

Brichard, Jean; and Colery, Jean-Claude, to Interox. Process for the manufacture of sodium perborate monohydrate and product thereof. 4,215,097, Cl. 423-279.000.

Bridgestone Tire Company Limited: *See*—
Ogawa, Masaki; Araki, Tamio; and Yamamoto, Shinji, 4,215,021, Cl. 260-5.000.
Takigawa, Hiroyoshi; Ogawa, Hiroshi; Ohkuni, Shinichiro; and Yahagi, Mitsuhisa, 4,214,618, Cl. 152-209.00D.
Briffod, Jean-Paul, to Ateliers des Charmilles S.A. EDM Apparatus for cutting a groove in a recess in a workpiece. 4,215,261, Cl. 219-69.00V.
Brimer, Claude M., to Linear International. Washing machine motor control system. 4,215,303, Cl. 318-752.000.
Briscoe, James E.: *See*—
Elphingstone, Eugene A.; Misak, Marvin D.; and Briscoe, James E., 4,215,001, Cl. 252-8.55C.
Brisson, Maurice J., to Forano Limitee. Tree delimbing apparatus. 4,214,616, Cl. 144-2.00Z.
British Railways Board: *See*—
Pollard, Maurice G.; and Goodall, Roger M., 4,215,403, Cl. 364-424.000.
Broad, Bernard H., to English Clays Lovering Pochin & Company, Limited. Tube pressure filters. 4,214,991, Cl. 210-232.000.
Broch, Eberhard, to Bohle, Josef. Integral manipulator, in particular for glass panes, plates or metal sheets. 4,214,785, Cl. 294-64.00R.
Brooks, Kirtland H. Liquid aerator. 4,215,081, Cl. 261-122.000.
Brookshier, Ernest L. Soil tilling machine having apparatus for automatic negative braking and drive control. 4,214,632, Cl. 172-42.000.
Brown, George W.; and Reynolds, Thomas L., to Advanced Micro Devices, Inc. Temperature compensated sense amplifier for PROMs and the like. 4,215,282, Cl. 307-364.000.
Brown & Root, Inc.: *See*—
Boehme, Herman F.; Srivastav, Avadhesh N. L.; and Lochridge, Joe C., 4,214,387, Cl. 37-195.000.
Rohde, Heinz K., 4,214,843, Cl. 405-225.000.
Browning, Joe L.; and Adams, Crestus L., to United States of America, Navy. Multi component propulsion system and method. 4,214,439, Cl. 60-216.000.
Bruce, Walter J.: *See*—
Bruce, Wayne M.; and Bruce, Walter J., 4,214,431, Cl. 57-22.000.
Bruce, Wayne M.; and Bruce, Walter J. Method and apparatus for rigging marine vessels. 4,214,431, Cl. 57-22.000.
Bruckl, Konrad; and Fryda, Georg, to AGFA-Gevaert, A.G. Device for tensioning corona-discharge wires. 4,214,733, Cl. 339-274.000.
Brunkhurst, Winfield S.: *See*—
Takacs, Robert J.; Brunkhurst, Winfield S.; and Le Breton, Edward T., 4,214,611, Cl. 138-30.000.
Brunner, Heinrich; and Fischer, Karin, to Siemens Aktiengesellschaft. Method and apparatus for securing the intermediate time durations in street traffic signal systems. 4,215,405, Cl. 364-436.000.
Buchel, Karl H.: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Plempel, Manfred; and Haller, Ingo, 4,215,131, Cl. 424-273.00R.
Buchner, Helmut; and Saufferer, Helmut, to Daimler-Benz Aktiengesellschaft. Parking heater and method using hydrides in motor vehicles powered by hydrogen. 4,214,699, Cl. 237-12.30C.
Buckley, Donald J.; Thaler, Warren A.; and Kennedy, Joseph P., to Exxon Research & Engineering Co. Isobutylene cyclodiolefin copolymers and terpolymers. 4,215,022, Cl. 260-5.000.
Buckley, William D., to Perkin-Elmer Corporation, The. X-ray lithography apparatus and method of use. 4,215,192, Cl. 430-270.000.
Buddemeyer, Bruce D.; Neville, William A.; Rozzo, Nancy A.; and Bourne, Richard G., to R.G.B. Laboratories, Inc. Mineral enrichment composition and method of preparing same. 4,214,996, Cl. 252-1.000.
Buder, Eckart: *See*—
Gnida, Bernd; Simon, Gerhard; Buder, Eckart; and Schwartz, Hans-Jurgen, 4,215,187, Cl. 429-161.000.
Buhler, Arthur; and Schutz, Hans U., to Ciba-Geigy Corporation. Copper, and nickel complexes of azo dyestuffs. 4,215,042, Cl. 260-151.000.
Bukhtiyarov, Ivan D.; Potanin, Veniamin G.; Alt, Viktor V.; Rakhmanin, Evgeny A.; Lyzlov, Vladimir M.; An, Viktor B.; Anikin, Valery P.; Koshevoi, Vladimir G.; Timonin, Nikolai G.; Zhdanov, Gennady P.; Gibert, Alfred I.; and Kolesnikov, Vladimir M. Automatic device for diagnostic checkup of vehicles. 4,215,404, Cl. 364-431.000.
Bulova Watch Company, Inc.: *See*—
Sutter, Hans-Rudolf, 4,214,434, Cl. 368-71.000.
Bulso, Joseph D., Jr.; and Lewers, William R., to Redicon Corporation. Triple action container drawing and redrawing apparatus. 4,214,471, Cl. 72-349.000.
Bumpas, Carl E.: *See*—
Baggett, Richard S.; and Bumpas, Carl E., 4,215,371, Cl. 358-172.000.
Bunker Ramo Corporation: *See*—
Biche, Barton A., 4,214,799, Cl. 339-20.000.
Bunyard, Michael L.; and Burkett, Bobby G., to Texas Instruments Incorporated. Dual microprocessor intelligent programmable process control system. 4,215,395, Cl. 364-101.000.
Bunyard, Michael L.: *See*—
Burkett, Bobby G.; and Bunyard, Michael L., 4,215,398, Cl. 364-101.000.
Henry, Raymond W.; Burkett, Bobby G.; and Bunyard, Michael L., 4,215,396, Cl. 364-101.000.
Burhans, Walter R., Jr.; Ciccarello, James L.; and Stumpf, Charles H., to Grumman Aerospace Corporation. Aircraft collapsible fuel tank. 4,214,721, Cl. 244-135.00B.
Burkett, Bobby G.; and Bunyard, Michael L., to Texas Instruments Incorporated. Dual microprocessor intelligent programmable process control system with communication link. 4,215,398, Cl. 364-101.000.
Burkett, Bobby G.: *See*—
Bunyard, Michael L.; and Burkett, Bobby G., 4,215,395, Cl. 364-101.000.
Henry, Raymond W.; Burkett, Bobby G.; and Bunyard, Michael L., 4,215,396, Cl. 364-101.000.
Burroughs Corporation: *See*—
Rege, Satish L.; and Woo, Beng-Yu, 4,215,423, Cl. 365-77.000.
Young, William C., 4,214,919, Cl. 148-1.500.
Burrous, Allen J., to Schlegel Corporation. Weatherstrip and method for sealing a gap. 4,214,930, Cl. 156-1.000.
Burtnett, Thomas C., to General Electric Company. Bus conductor support system. 4,215,237, Cl. 174-99.00B.
Bush, Benjamin F. Device for illuminating reticles in optical instruments. 4,214,371, Cl. 33-241.000.
Bussey, Harry, Jr. Foamable thermoplastic stick and foamed element made therefrom. 4,215,166, Cl. 428-159.000.
Busygin, Valery P.: *See*—
Smirnov, Boris A.; Mochalov, Vyacheslav N.; Busygin, Valery P.; Utyamyshev, Rustam I.; and Semenov, Alexei I., 4,214,584, Cl. 128-218.00M.
Butera, Anthony W. Integrated smoke tester. 4,214,480, Cl. 73-421.50A.
Buynak, Eugene B.; and Hilleman, Maurice R., to Merck & Co., Inc. Parainfluenza virus vaccine and its preparation. 4,215,107, Cl. 424-89.000.
Byler, William H., to Byler, William H., Revocable Trust, William H. Byler and Thelma T. Byler, Trustees. Foot warming device. 4,214,588, Cl. 128-402.000.
Byler, William H., Revocable Trust: *See*—
Byler, William H., 4,214,588, Cl. 128-402.000.
C L Industries, Inc.: *See*—
Kho, Khe-Bing J.; and Stewart, Patrick H., 4,215,012, Cl. 252-429.00R.
Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., to Ford Motor Company. Fuse holder with insertion ramp. 4,214,801, Cl. 339-59.00R.
Caldwell, Alistair J.: *See*—
Redding, Thomas P.; Herbert, Glenn M.; and Caldwell, Alistair J., 4,214,746, Cl. 271-294.000.
Caldwell, Benjamin P., Jr. Lever assemblies. 4,214,395, Cl. 43-18.00R.
Caldwell, Oscar D. Bread cooking device. 4,214,517, Cl. 99-428.000.
Calgon Corporation: *See*—
Sinha, Rabindra K.; Polinsky, Charles K.; Cifrulak, S. David; and Wagner, Norman J., 4,215,096, Cl. 423-241.000.
California R & D Center: *See*—
Jones, Lawrence T.; Sims, Anson; and Howden, Ashley G., 4,214,674, Cl. 222-79.000.
Camacho, Carlos J., to Forminfan, S.A. Dismountable frame for children's furniture. 4,214,325, Cl. 5-99.00B.
Cameron Iron Works, Inc.: *See*—
Williams, Leonard E., Jr.; and Taylor, William M., 4,214,600, Cl. 137-72.000.
Camp, Albert T.; Mueller, Kurt F.; and Nauflett, George W., to United States of America, Navy. Liquid monopropellants containing dissolved combustion modifiers. 4,214,929, Cl. 149-109.400.
Campbell, John W.; and Campbell, Lawrance W. Fishhook. 4,214,398, Cl. 43-43.160.
Campbell, Lawrance W.: *See*—
Campbell, John W.; and Campbell, Lawrance W., 4,214,398, Cl. 43-43.160.
Campbell, Thomas C., to General Electric Company. Method for reducing nitrous oxide emissions from a gas turbine engine. 4,214,435, Cl. 60-39.050.
Canadian Industries Limited: *See*—
Heppolette, Robert L.; Khan, Hamid I.; and McEwan, Ian H., 4,215,027, Cl. 260-29.4UA.
Cannell, John F. Electrolytic process and apparatus for the recovery of metal values. 4,214,964, Cl. 204-105.00R.
Caraway, Robert O. Raking and baling machine. 4,214,428, Cl. 56-341.000.
Carignan, Thomas N.: *See*—
Reynard, John M.; Carignan, Thomas N.; Paglia, Richard; and Rich, Joseph F., 4,215,249, Cl. 179-111.00R.
Carlin, Joseph T.; Ware, James W.; Mills, Melvin E., Jr.; and Tyler, Timothy N., to Texaco Inc. Surfactant flooding oil recovery process. 4,214,999, Cl. 252-8.55D.
Carlson, Richard D.: *See*—
Marciniak, Harry W.; Carlson, Richard D.; and Dever, James L., 4,215,034, Cl. 260-45.80A.
Carman Industries, Inc.: *See*—
Wetherton, William M., 4,214,680, Cl. 222-161.000.
Carr, Herbert F.; and Cooper, Robert W. Laterally adjustable trailer hitch system. 4,214,772, Cl. 280-415.00A.
Carr, John C.: *See*—
Wallace, Franklin D.; and Carr, John C., 4,215,224, Cl. 562-485.000.
Carrieri, Louis F., to Gulf & Western Manufacturing Company. Shock dampening systems for presses. 4,214,496, Cl. 83-617.000.
Carson, Chrislyn M.: *See*—
Rogers, Richard B.; Carson, Chrislyn M.; and Ehr, Robert J., 4,215,127, Cl. 424-269.000.
Carter, Walter H.; Christopher, Charles A.; and Grodde, Karl-Heinz, to Texaco Inc.; and Deutsche Texaco Aktiengesellschaft. Adapter for a sensitive viscometer. 4,214,475, Cl. 73-59.000.

Caserio, Frederick F., Jr.: *See*—
Kissel, Charles L.; and Caserio, Frederick F., Jr., 4,215,147, Cl. 424-333.000.
Kissel, Charles L.; and Caserio, Frederick F., Jr., 4,215,148, Cl. 424-333.000.

Casio Computer Co., Ltd.: *See*—
Terao, Hiroyuki, 4,214,433, Cl. 368-28.000.

Casper, Russell L., to General Electric Company. Three-dimensional isolation mount. 4,214,738, Cl. 267-141.100.

Cassia, Antonio M., to Steiner Corporation. Dispenser for liquid soap with telescoping housing members and container therefor. 4,214,676, Cl. 222-83.500.

Cassidy, Raymond T.: *See*—
Sheehan, Robert F.; and Cassidy, Raymond T., 4,214,839, Cl. 402-31.000.

Castoldi, Aldo: *See*—
Spaziante, Placido M.; Giuffre, Luigi; Castoldi, Aldo; and Sioli, Giancarlo, 4,215,009, Cl. 252-184.000.

Caterpillar Tractor Co.: *See*—
Price, Robert J., 4,214,923, Cl. 148-12.00R.
Ritchie, Timothy J.; and White, Ralph E., 4,214,922, Cl. 148-9.500.

Centralny Osrodek Badawczo-Rozwojowy Przemyslu Betonow "Cebet": *See*—
Siejko, Janina; and Jatymowicz, Hanna, 4,214,911, Cl. 106-87.000.

Centronics Data Computer Corp.: *See*—
van Namen, Frederik T., 4,214,691, Cl. 226-74.000.

Cerroni, Manlio. Plant for transforming town solid waste into a fertilizer. 4,215,201, Cl. 435-290.000.

CHA Industries: *See*—
Mahl, Gunard O. B., 4,214,853, Cl. 417-154.000.

Chabanov, Alim I.; Daniljuk, Valery V.; Valeev, Dzhavit K.; Bauer, Alfrid G.; Petrov, Boris N.; Tropin, Sergei N.; Chuguev, Dmitry I.; Ivanov, Ivan V.; Braun, Georgy A.; and Alexandrov, Valery M. Apparatus for controlling the thickness of rolled products. 4,214,464, Cl. 72-8.000.

Chabot, Ferdinand E.; and McGinnis, James P., to Square D Company. Circuit breaker having an electronic fault sensing and trip initiating unit. 4,215,328, Cl. 335-6.000.

Chain, Frank. Drag reducing apparatus. 4,214,787, Cl. 296-1.00S.

Chambers Corporation: *See*—
Scherer, Richard M., 4,214,571, Cl. 126-190.000.

Chambersburg Engineering Company: *See*—
Rickrode, Jack A.; and Frame, Charles W., 4,214,363, Cl. 29-802.000.

Champion International Corporation: *See*—
Jaeschke, Harold R.; and Boyle, Daniel J., 4,214,659, Cl. 206-365.000.
Manning, James F., 4,214,697, Cl. 229-52.00B.
Patmore, Thomas R.; and Boyle, Daniel J., 4,214,400, Cl. 43-121.000.

Chance, Ronald R.: *See*—
Yee, Kwok C.; Preziosi, Anthony F.; Patel, Gordhanbhai N.; Chance, Ronald R.; Miller, Granville G.; and Baughman, Ray H., 4,215,208, Cl. 526-285.000.

Chang, Jack C.: *See*—
Battaglia, Charles J.; Chang, Jack C.; and Daniel, Daniel S., 4,214,968, Cl. 204-195.00M.

Chang, Tao-Yuan, to Bell Telephone Laboratories, Incorporated. Far-infrared laser tuned by the dynamic Stark effect. 4,215,320, Cl. 331-94.50G.

Chang, Yu-Wen; and Paul, Jeffrey A., to Hughes Aircraft Company. Dielectric image guide integrated harmonic pumped mixer. 4,215,313, Cl. 455-326.000.

Chanin, Harold. Table tennis ball guard. 4,214,752, Cl. 273-30.000.

Channing, Harry: *See*—
Windisch, Lawrence; Nees, John; and Channing, Harry, 4,215,307, Cl. 320-2.000.

Chao, Robert L., to Supertex, Inc. Detection circuit and structure therefor. 4,215,281, Cl. 307-304.000.

Chapuis, Maurice; and Machat, Jean-Yves, to Compagnie Generale des Etablissements Michelin. Erosion device comprising a head with knives and process. 4,214,711, Cl. 241-30.000.

Charlon, Pierre: *See*—
Durand, Pierre; Charlon, Pierre; and Jouffroy, Guy, 4,215,207, Cl. 526-64.000.

Charter, Kenneth F., to Owens-Corning Fiberglas Corporation. Weatherproof joint cover for fabric roofs. 4,214,407, Cl. 52-63.000.

Chattha, Mohinder S., to Ford Motor Company. Coating compositions including oligomeric hydroxy phosphate catalyst-d. 4,215,204, Cl. 525-161.000.

Chemdet Sonic Systems, Inc.: *See*—
Watts, Grady; and Robinson, Michael, 4,214,705, Cl. 239-227.000.

Chemed Corporation: *See*—
Borgerding, James F.; and Claus, Robert T., 4,215,004, Cl. 252-156.000.

Chemical Research and Licensing Company: *See*—
Smith, Lawrence A., Jr., 4,215,011, Cl. 252-426.000.

Chemische Werke Huls Aktiengesellschaft: *See*—
Gras, Rainer; and Schnurbusch, Horst, 4,215,165, Cl. 428-35.000.

Chen, Robert H. K.; and Hajos, Zoltan G., to Ortho Pharmaceutical Corporation. Total synthesis of (1RS, 4SR, 5RS)-4-(4,8-dimethyl-5-hydroxy-7-nonenyl)-4-methyl-3,8-dioxabicyclo[3.2.1]octane-1-acetic acid. 4,215,048, Cl. 260-340.600.

Cheresnowsky, Michael J., to GTE Products Corporation. Process for producing cobalt metal powder. 4,214,896, Cl. 75-0.5AA.

Cheresnowsky, Michael J.: *See*—
Gingerich, Richard G. W.; Vanderpool, Clarence D.; Fedorchak, Mary A.; Ritsko, Joseph E.; and Cheresnowsky, Michael J., 4,214,895, Cl. 75-0.5AA.

Cherkofsky, Saul C.; and Sharpe, Thomas R., to Du Pont de Nemours, E. I., and Company. Antiinflammatory 2-substituted-1H-phenanthro[9,10-d]imidazoles. 4,215,135, Cl. 424-273.00B.

Chevron Research Company: *See*—
Danzik, Mitchell, 4,215,211, Cl. 528-313.000.
Pyle, Walter R., 4,214,614, Cl. 141-1.000.

Chiang, David, to MCC Associates. Control system for stepping motors, a method of operating stepping motors, and a method for selecting current patterns for stepping motors. 4,215,302, Cl. 318-696.000.

Chiba, Kiyoshi: *See*—
Yonemura, Utami; Chiba, Kiyoshi; Itoh, Kunio; Mitani, Yuji; and Sobajima, Shigenobu, 4,215,168, Cl. 428-215.000.

Chiji, Masahiro: *See*—
Arita, Koji; Chiji, Masahiro; Asami, Takayoshi; Karaki, Yasuhumi; and Endo, Toshihiko, 4,214,925, Cl. 148-127.000.

Chiyoda Chemical Engineering & Construction Co.: *See*—
Nakanishi, Hajime; Ozaki, Kiyoji; Shinozuka, Toshio; Izumi, Masato; Aiba, Takaaki; Kaji, Hisatsugu; Sumida, Yutaka; and Ishihara, Takao, 4,214,979, Cl. 208-128.000.

Chizek, Franklin J. Method and means for placing an identification mark on a hog. 4,214,490, Cl. 81-9.220.

Choyke, Wolfgang J.; and Hoffman, Richard A., to Westinghouse Electric Corp. Hot pressed SiC-high power laser mirror. 4,214,818, Cl. 350-310.000.

Christensen, Burton G.; and DiNinno, Frank P., to Merck & Co., Inc. 6 Substituted amino-2-substituted-pen-2-em-3-carboxylic acid. 4,215,124, Cl. 424-263.000.

Christopher, Charles A.: *See*—
Carter, Walter H.; Christopher, Charles A.; and Grodde, Karl-Heinz, 4,214,475, Cl. 73-59.000.

Christophersen, Steve; and Neaman, Raymond G., to Donaldson Company, Inc. Method and apparatus for contacting liquids and gases. 4,215,079, Cl. 261-36.00R.

Christy, Harold: *See*—
Bernham, Robert R.; and Christy, Harold, 4,214,655, Cl. 198-374.000.

Chu, Nori Y. C.: *See*—
Hovey, Richard J.; Chu, Nori Y. C.; Piusz, Peter G.; and Fuchsman, Charles H., 4,215,010, Cl. 252-300.000.

Chuguev, Dmitry I.: *See*—
Chabanov, Alim I.; Daniljuk, Valery V.; Valeev, Dzhavit K.; Bauer, Alfrid G.; Petrov, Boris N.; Tropin, Sergei N.; Chuguev, Dmitry I.; Ivanov, Ivan V.; Braun, Georgy A.; and Alexandrov, Valery M., 4,214,464, Cl. 72-8.000.

Chumley, Calvin L.: *See*—
Pryor, Harry H.; and Chumley, Calvin L., 4,214,654, Cl. 194-1.00E.

Chupik, John M. Four-way double door frame. 4,214,405, Cl. 49-382.000.

Ciba-Geigy Corporation: *See*—
Buhler, Arthur; and Schutz, Hans U., 4,215,042, Cl. 260-151.000.
Drabek, Jozef, 4,215,122, Cl. 424-251.000.

Ciccarello, James L.: *See*—
Burhans, Walter R., Jr.; Ciccarello, James L.; and Stumpf, Charles H., 4,214,721, Cl. 244-135.00B.

Cifrulak, S. David: *See*—
Sinha, Rabindra K.; Polinsky, Charles K.; Cifrulak, S. David; and Wagner, Norman J., 4,215,096, Cl. 423-241.000.

Cilag-Chemie A.G.: *See*—
Richter, Carl; and Feth, Georg, 4,215,220, Cl. 548-341.000.

Clairol Inc.: *See*—
Walter, Henry J.; and Mack, William, 4,214,365, Cl. 30-224.000.

Clark, George H.; and Clark, Mary A., to Rescorp. Response evaluation module for teaching driver training. 4,214,381, Cl. 35-11.00R.

Clark, Kenneth L.; Leach, George S.; and Howard, Robert W., to EMM Semi. Process of forming a semiconductor memory cell with continuous polysilicon run circuit elements. 4,214,917, Cl. 148-1.500.

Clark, Mary A.: *See*—
Clark, George H.; and Clark, Mary A., 4,214,381, Cl. 35-11.00R.

Clarke-Gravely Corporation: *See*—
Nise, Wilfred C.; and Nelson, Bertel S., 4,214,337, Cl. 15-49.00R.

Clarkson, Frank R.: *See*—
Wills, Jack D.; and Clarkson, Frank R., 4,214,683, Cl. 224-42.200.

Claus, Robert T.: *See*—
Borgerding, James F.; and Claus, Robert T., 4,215,004, Cl. 252-156.000.

Clemens, Ogden A., to Dravo Corporation. Two stage wastewater flotation. 4,214,987, Cl. 210-44.000.

Clerc, Adrien, to Commissariat a l'Energie Atomique. Method of assembly of two metallic parts. 4,214,358, Cl. 29-520.000.

Cluett, Peabody & Co., Inc.: *See*—
Crawford, Douglas J., 4,214,741, Cl. 271-18.300.

Coburn, Robert E., to Molins Machine Company, Inc. Slitter scorer apparatus. 4,214,495, Cl. 83-425.400.

Cockayne, David J., to Modular Automation Limited. Dispensing devices. 4,214,844, Cl. 406-123.000.

Cocron, Istvan: *See*—
Stemme, Otto; Lermann, Peter; Wagensonner, Eduard; and Cocron, Istvan, 4,214,824, Cl. 354-23.00D.

Cogar, George R.: *See*—
Bernham, Robert R.; and Christy, Harold, 4,214,655, Cl. 198-374.000.

Coker, Thomas G.; LaConti, Anthony B.; Balko, Edward N.; and McGray, George B., to General Electric Company. Electrolysis of alkali metal halides in a three-compartment cell with a pressurized buffer compartment. 4,214,958, Cl. 204-98.000.

Colangelo, Fernando M. Battery operated light.. 4,215,389, Cl. 362-199.000.

Coldren, Daniel R.; and Marley, James E., to AMP Incorporated. Method of making insulated electrical terminations. 4,214,361, Cl. 29-863.000.

Cole, Martin T. Intrusion or movement detector. 4,215,341, Cl. 340-552.000.

Colery, Jean-Claude: *See*—
Brichard, Jean; and Colery, Jean-Claude, 4,215,097, Cl. 423-279.000.

Colgate-Palmolive Company: *See*—
Dillarstone, Alan; Lowe, Norman C.; and Cropper, Edwin, 4,214,915, Cl. 134-19.000.
Gaffar, Abdul; and Niles, Hollandra P., 4,215,105, Cl. 424-57.000.

Collier, Samuel J.: *See*—
Raseley, LeRoy J.; Collier, Samuel J.; and McCarty, Henry G., 4,214,883, Cl. 55-426.000.

Collins Industries, Inc.: *See*—
Downing, Harold A., 4,214,849, Cl. 414-545.000.

Comar reg. Trust: *See*—
Miotti, Giosue, 4,214,374, Cl. 33-300.000.

Commissariat a l'Energie Atomique: *See*—
Barbier, Daniel; Lancre, Jean C.; Lauwick, Bernard; and Poujois, Robert, 4,215,278, Cl. 307-116.000.
Clerc, Adrien, 4,214,358, Cl. 29-520.000.

Commonwealth Hosiery Mills, Inc.: *See*—
Freeze, Baxter P., 4,214,331, Cl. 8-150.000.

Communications Satellite Corporation: *See*—
Onufry, Michael, Jr., 4,215,252, Cl. 179-170.200.

Compagnie Centrale SICLI: *See*—
Barbier, Daniel; Lancre, Jean C.; Lauwick, Bernard; and Poujois, Robert, 4,215,278, Cl. 307-116.000.

Compagnie Francaise des Petroles: *See*—
Le Garfe, Roger J.; Pignal, Edmond; and Magloire, Charles J., 4,214,692, Cl. 228-44.10R.

Compagnie Generale des Etablissements Michelin: *See*—
Chapuis, Maurice; and Machat, Jean-Yves, 4,214,711, Cl. 241-30.000.

Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines (DORIS): *See*—
Le Garfe, Roger J.; Pignal, Edmond; and Magloire, Charles J., 4,214,692, Cl. 228-44.10R.

Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See*—
Giraud, Georges J. L., 4,215,421, Cl. 364-900.000.

Compagnie Maritime d'Expertises: *See*—
Le Garfe, Roger J.; Pignal, Edmond; and Magloire, Charles J., 4,214,692, Cl. 228-44.10R.

Conceptual Engineering: *See*—
Brastow, Carl H., 4,215,262, Cl. 219-95.000.

Conow, Hans: *See*—
Kleimenhagen, Gunter; Rosenkranz, Otto; Albrecht, Peter; Conow, Hans; Kother, Holger; Schmidt, Dieter; and Vogel, Klaus, 4,214,860, Cl. 425-149.000.

Conrad, Rene A., to Dynaloc Corporation. Positive drive system. 4,214,488, Cl. 474-148.000.

Consaga, John P., to United States of America, Navy. Dimethyl hydantoin bonding agents in solid propellants. 4,214,928, Cl. 149-19.900.

Consortium fur Elektrochemische Industrie GmbH: *See*—
Kaufmann, Rudolf; Braunling; Haberle, Norman; and Muller, Reinhard, 4,215,057, Cl. 260-347.500.

Container Corporation of America: *See*—
Barton, Paul R.; and Welborn, Johnnie M., 4,214,696, Cl. 229-40.000.

Contino, Peter; and Stiglich, Nicholas M. Cooker for individual portions of particulate foodstuff. 4,214,514, Cl. 99-330.000.

Control Data Corporation: *See*—
Johnson, Allan L., Jr., 4,215,430, Cl. 375-111.000.

Controle Bailey: *See*—
Lejon, Jean, 4,215,340, Cl. 340-507.000.

Conwed Corporation: *See*—
Planes, Felipe; Eckerline, Charles A.; and Erickson, Gordon A., 4,214,646, Cl. 181-287.000.

Conybear, James G.: *See*—
Thekdi, Arvind C.; Hemsath, Klaus H.; Conybear, James G.; Vereecke, Frank J.; and Verhoff, Steven H., 4,214,869, Cl. 432-31.000.

Cook, Albert N., to Singer Company, The. Variable presser bar pressure control arrangement. 4,214,540, Cl. 112-235.000.

Cooke, Ermalinda O., administratrix: *See*—
Otto, Julian A., deceased; and Cooke, Ermalinda O., administratrix, 4,215,140, Cl. 424-301.000.

Coombes, Graham E.; and Rao, Hiranya S., to Systems Control, Inc. Energy cogeneration system. 4,214,451, Cl. 60-648.000.

Cooper, Daniel: *See*—
Patnoi, Charles M.; Cooper, Daniel; and Zellers, Robert D., 4,214,590, Cl. 128-710.000.

Cooper, Keith A., to International Paper Company. One-piece reinforced container. 4,214,695, Cl. 229-36.000.

Cooper, Robert W.: *See*—
Carr, Herbert F.; and Cooper, Robert W., 4,214,772, Cl. 280-415.00A.

Cooperation Pharmaceutique Francaise: *See*—
Durlarch, Jean P., 4,215,136, Cl. 424-274.000.

Copelan, William L. Rope binder. 4,214,350, Cl. 24-129.00R.

Corbero, Paul A., to Honeywell Inc. Timer circuit with multiple time delay outputs. 4,215,272, Cl. 250-293.000.

Cordaro, Giovanni; Dall'Olio, Cristiano; Di Pino, Duccio; and Guarene, Eugenio, to CSELT-Centro Studi e Laboratori Telecomunicazioni S.p.A. Method of and system for synchronizing data reception and retransmission aboard communication satellite. 4,215,348, Cl. 370-97.000.

Coreplugs Limited: *See*—
Oulsnam, Bryon T., 4,214,532, Cl. 102-30.000.

Cornell Research Foundation, Inc.: *See*—
Miyata, Teruo; Stenzel, Kurt H.; and Rubin, Albert L., 4,215,200, Cl. 435-273.000.

Cornils, Boy; Konkol, Werner; Diekhaus, Gerhard; and Wiebus, Ernst, to Ruhrchemie Aktiengesellschaft. Process for the production of diamines. 4,215,073, Cl. 260-563.00D.

Corning Glass Works: *See*—
Grey, David S.; and Wey, Robert A., 4,215,263, Cl. 219-121.00L.
Shay, George C.; and Simon, Raphael A., 4,214,886, Cl. 65-121.000.

Corse, Louis G., to Machines Chambon S.A. System for compensating for errors in registration between colors printed in multi-color printing machine. 4,214,524, Cl. 101-181.000.

Corwin, William C., to Beckman Instruments, Inc. Inking system with saturation control means for multi-pen recorders. 4,215,352, Cl. 346-140.00R.

Cottrell, Ian W.: *See*—
Racciato, Joseph S.; and Cottrell, Ian W., 4,214,912, Cl. 106-208.000.

Covell, Calvin J. Vehicle top ski rack. 4,214,687, Cl. 224-323.000.

Crane, Michael L.: *See*—
Williams, William; and Crane, Michael L., 4,214,334, Cl. 12-142.0RS.

Crawford, Douglas J., to Cluett, Peabody & Co., Inc. Needle pickup device. 4,214,741, Cl. 271-18.300.

Creusot-Loire: *See*—
Berger, Pierre, 4,214,947, Cl. 162-18.000.

Crnojevich, Ranko; Wiewiorowski, Edward I.; and Yu, Peter H., to Amax Inc. Production of nonferrous metals with low selenium contents. 4,214,900, Cl. 75-109.000.

Cropper, Edwin: *See*—
Dillarstone, Alan; Lowe, Norman C.; and Cropper, Edwin, 4,214,915, Cl. 134-19.000.

Crossman, Richard L.; and French, Robert J., to Goodyear Aerospace Corporation. Brake adjuster having multi-sided internal broach. 4,214,650, Cl. 188-196.00R.

Crouzet, Jean: *See*—
Rios, Gilbert M.; Gibert, Henri; Crouzet, Jean; and Vincent, Jean-Claude, 4,215,151, Cl. 426-467.000.

Crow, Floyd, to Simple Pleasures, Inc. Smoking system. 4,214,658, Cl. 206-244.000.

CSELT-Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See*—
Cordaro, Giovanni; Dall'Olio, Cristiano; Di Pino, Duccio; and Guarene, Eugenio, 4,215,348, Cl. 370-97.000.

Cubieta, John J.: *See*—
Berger, Sidney; and Cubieta, John J., 4,214,670, Cl. 220-70.000.

Cullen, Terry B.: *See*—
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; Jones, F. David; Edblad, Warren A.; and Wallace, Frank E., 4,215,406, Cl. 364-468.000.

Cummings, Thomas L., to Olin Corporation. Method for adjusting anodes. 4,214,959, Cl. 204-99.000.

Cunningham, Joseph A., to Bendix Corporation, The. Friction disc for an aircraft brake. 4,214,651, Cl. 188-251.00R.

Custer, Byron K., Jr.; and Custer, Ruth M. Suspended protective sheets. 4,214,328, Cl. 5-494.000.

Custer, Ruth M.: *See*—
Custer, Byron K., Jr.; and Custer, Ruth M., 4,214,328, Cl. 5-494.000.

Czerepinski, Ralph G.: *See*—
Garrett, Walter L.; and Czerepinski, Ralph G., 4,214,531, Cl. 101-451.000.

Dacor Corporation: *See*—
Pedersen, Vernon G., 4,214,580, Cl. 128-204.260.

Dahms, Francis A., to Emhart Industries, Inc. Apparatus for straight line shearing. 4,214,494, Cl. 83-150.000.

Dahms, Francis A., to Emhart Industries, Inc. Apparatus for straight line shearing. 4,214,497, Cl. 83-640.000.

Daig Corporation: *See*—
Little, Richard L., 4,214,594, Cl. 128-786.000.
Little, Richard L., 4,214,804, Cl. 339-183.000.

Dailey, Gregory M. Fly tying device. 4,214,739, Cl. 269-75.000.

Daimler-Benz Aktiengesellschaft: *See*—
Buchner, Helmut; and Saufferer, Helmut, 4,214,699, Cl. 237-12.30C.

Dalal, Hormazdyar M.; Ghafghaichi, Majid; Kasprzak, Lucian A.; and Wimpfheimer, Hans, to International Business Machines Corporation. Method for fabricating tantalum semiconductor contacts. 4,215,156, Cl. 427-84.000.

Dalaunay, Just M.: *See*—
Bobard, Charles E.; Dalaunay, Just M.; and Darcy, Raymond M., 4,214,427, Cl. 56-330.000.

Dall'Olio, Cristiano: *See*—
Cordaro, Giovanni; Dall'Olio, Cristiano; Di Pino, Duccio; and Guarene, Eugenio, 4,215,348, Cl. 370-97.000.

Danel, Francois, to Societe Anonyme dete: Alsthom-Atlantique. Device for injecting a gas into a liquid. 4,215,082, Cl. 261-124.000.

Daniel, Daniel S.: *See*—
Battaglia, Charles J.; Chang, Jack C.; and Daniel, Daniel S., 4,214,968, Cl. 204-195.00M.

Daniljuk, Valery V.: *See*—
Chabanov, Alim I.; Daniljuk, Valery V.; Valeev, Dzhavit K.; Bauer, Alfrid G.; Petrov, Boris N.; Tropin, Sergei N.; Chuguev, Dmitry I.; Ivanov, Ivan V.; Braun, Georgy A.; and Alexandrov, Valery M., 4,214,464, Cl. 72-8.000.

Danzik, Mitchell, to Chevron Research Company. Polymerization of 2-pyrrolidone with CO_2/SO_2. 4,215,211, Cl. 528-313.000.

Darcy, Raymond M.: *See*—
Bobard, Charles E.; Dalaunay, Just M.; and Darcy, Raymond M., 4,214,427, Cl. 56-330.000.

Dashew, Stanley A.; and Sutton, Charles D., to Omnithruster Inc. Boat thruster. 4,214,544, Cl. 114-151.000.

Data Card Corporation: *See*—
Schmidt, Robert H., 4,215,300, Cl. 318-603.000.

D'Atre, John D.; and Williamson, Dennis F., to General Electric Company. Motor/brake transitioning for an inverter driven a-c induction motor. 4,215,304, Cl. 318-758.000.

D'Atre, John D.; and Plunkett, Allan B., to General Electric Company. Excitation commanding for current fed motor drives. 4,215,305, Cl. 318-803.000.

Dauvergne, Jean L. R., to Societe Anonyme Francaise du Ferodo. Power-assisted steering device. 4,214,642, Cl. 180-132.000.

David, Stephen T.: *See*—
Ullman, Michael K.; David, Stephen T.; and Gallian, Claude E., 4,215,104, Cl. 424-15.000.

Davidson, Richard A., to Feature Film Services. Subscriber-limited reception television broadcast security encoder-decoder system. 4,215,366, Cl. 358-124.000.

Davies, John W., III, to Gilson Brothers Company. Fuel tank including air entrapment chambers. 4,214,767, Cl. 280-5.00A.

Davis, Chester A.: *See*—
Kaplan, Julius F.; Edelberg, Norman L.; and Davis, Chester A., 4,214,596, Cl. 132-7.000.

Davis, Hyman R.; Nasr, Wagih I.; Roethlin, Siegfried M.; and Sherwood, Harold D., to Lummus Company, The. Solvent recovery process for processing of hydrocarbons. 4,214,975, Cl. 208-33.000.

Davis, James W.: *See*—
Mabrouk, Saied A.; Morgan, Edward T.; and Davis, James W., 4,214,523, Cl. 101-148.000.

Davis, Wayne E., to Johns-Manville Corporation. Grounding arrangement for microelectronic sprinkler control. 4,215,382, Cl. 361-166.000.

Dayco Corporation: *See*—
Elson, Arthur M., 4,215,384, Cl. 361-215.000.
Philleo, Robert C., 4,214,458, Cl. 64-11.00R.

Deaton, Thomas M.; and Kohn, Gary A., to Otis Engineering Corporation. Subsurface safety valve. 4,214,606, Cl. 137-495.000.

Debs, Victor, to Levolor Lorentzen, Inc. Vertical blind. 4,214,622, Cl. 160-168.00A.

De Cat, Arthur H.: *See*—
De Winter, Walter F.; Timmerman, Daniel M.; De Cat, Arthur H.; and Kockelbergh, Godfried A., 4,215,196, Cl. 430-627.000.

decofa Kaffee-Bearbeitungs-GmbH: *See*—
Kurzhals, Hans-Albert; and Sylia, Klaus F., 4,215,150, Cl. 426-430.000.

Deem, Mary L.: *See*—
Stueben, Kenneth C.; and Deem, Mary L., 4,215,076, Cl. 568-461.000.

Deep Oil Technology, Inc.: *See*—
Franks, Neal S., 4,214,842, Cl. 405-191.000.

Deflecto Corporation: *See*—
Meyer, Stephen T., 4,214,380, Cl. 34-235.000.

Deguchi, Katsuhiko; Mino, Junryo; and Tsujii, Kaoru, to Kao Soap Co., Ltd. Durable anti-fogging composition. 4,214,908, Cl. 106-13.000.

De Hair, Johannes T. W.; and Boogerd, Gert M., to U.S. Philips Corporation. Luminescent material, luminescent screen provided with such a material and low-pressure mercury vapor. 4,215,289, Cl. 313-486.000.

De Jong, Feike; Reinhoudt, David N.; and Torny-Schutte, Gerridina J., to Shell Development Company. Dissolving barium sulfate scale with aqueous solutions of bicyclic macrocyclic polyethers and organic acid salts. 4,215,000, Cl. 252-8.55B.

Del Bianco, Matthew A., to Du Pont de Nemours, E. I., and Company. Lamination process. 4,214,936, Cl. 156-302.000.

Deliyannides, John S.: *See*—
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; Jones, F. David; Edblad, Warren A.; and Wallace, Frank E., 4,215,406, Cl. 364-468.000.

Delplast Limited: *See*—
Williams, William; and Crane, Michael L., 4,214,334, Cl. 12-142.0RS.

Delves, Elsworth R., to Purpose Engineers Limited. Punching device. 4,214,357, Cl. 29-233.000.

DEMAG Aktiengesellschaft: *See*—
Franke, Rudiger, 4,214,386, Cl. 37-190.000.

de Mendez, Michel O., to Souriau & Cie. Connecting module for single-strand optical conductors and a connector including at least one such module. 4,214,812, Cl. 350-96.210.

Denis, Jean-Marie D.: *See*—
Ranganathan, Ramaswami; Denis, Jean-Marie D.; and Pruden, Barry B., 4,214,977, Cl. 208-108.000.

Denko, Masatoshi. Disk address controller. 4,215,400, Cl. 364-200.000.

Dennison Manufacturing Company: *See*—
Geurtsen, Friedrich H. H.; and Kebbel, Waldeman, 4,214,937, Cl. 156-361.000.

de Putter, Warren J., to Wavin B.V. Tube of non woven material for reversed osmosis. 4,214,612, Cl. 138-144.000.

DeSautel, Edwin R. Flying disc. 4,214,720, Cl. 244-12.200.

Deubel, Reinhold: *See*—
Uhrig, Heinz; List, Karl-Hermann; and Deubel, Reinhold, 4,214,872, Cl. 8-589.000.

Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Electronic musical instrument with automatic loudness compensation. 4,214,503, Cl. 84-1.270.

Deutsche Automobilgesellschaft mbH, Firma: *See*—
Gutmann, Gunter; and Benczur-Urmossy, Gabor, 4,215,184, Cl. 429-101.000.

Deutsche Texaco Aktiengesellschaft: *See*—
Carter, Walter H.; Christopher, Charles A.; and Grodde, Karl-Heinz, 4,214,475, Cl. 73-59.000.

Dever, James L.: *See*—
Marciniak, Harry W.; Carlson, Richard D.; and Dever, James L., 4,215,034, Cl. 260-45.80A.

de Vries, Donald S., Jr.: *See*—
Hock, Jules M.; and de Vries, Donald S., Jr., 4,214,507, Cl. 92-254.000.

Dewar, John H.: *See*—
Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., 4,214,801, Cl. 339-59.00R.

Dewey, Alfred H., Jr. Apparatus for harvesting beans or similar crops. 4,214,423, Cl. 56-130.000.

De Winter, Walter F.; Timmerman, Daniel M.; De Cat, Arthur H.; and Kockelbergh, Godfried A., to AGFA-GEVAERT N.V. Photographic elements in which gelatin silver halide layers contain polymers with semicarbazone or alkoxy carbonyl hydrazone groups. 4,215,196, Cl. 430-627.000.

Diamond International Corporation: *See*—
Struble, Glenn E., 4,214,694, Cl. 229-31.0FS.

Diamond Shamrock Corporation: *See*—
Magee, Thomas A., 4,215,075, Cl. 260-566.0AC.

Diamond Shamrock Technologies, S.A.: *See*—
Spaziante, Placido M.; and Nidola, Antonio, 4,214,970, Cl. 204-265.000.

Diamond, Steven E.; and Mares, Frank, to Allied Chemical Corporation. Direct reaction of anilines with olefins. 4,215,218, Cl. 546-162.000.

Dickey, Herbert C., to Ealing Corporation, The. Adhesive layer pocketed scroll for reading machine. 4,214,388, Cl. 40-159.000.

Diehl, Robert J., to W-K-M Wellhead Systems, Inc. Holddown mechanism for a tubing hanger in a wellhead. 4,214,778, Cl. 285-39.000.

Diekhaus, Gerhard: *See*—
Cornils, Boy; Konkol, Werner; Diekhaus, Gerhard; and Wiebus, Ernst, 4,215,073, Cl. 260-563.00D.

Dight, Lawrence B.: *See*—
Kennedy, James V.; and Dight, Lawrence B., 4,214,978, Cl. 208-120.000.

Digital Communications, Inc.: *See*—
Kirk, Donald, Jr., 4,215,370, Cl. 358-146.000.

Digital Equipment Corporation: *See*—
Wang, Cheng H., 4,214,836, Cl. 400-124.000.

Dillarstone, Alan; Lowe, Norman C.; and Cropper, Edwin, to Colgate-Palmolive Company. Method and composition for cleaning ovens. 4,214,915, Cl. 134-19.000.

DiNinno, Frank P.: *See*—
Christensen, Burton G.; and DiNinno, Frank P., 4,215,124, Cl. 424-263.000.

Dinkel, Ernst J., to Eldon Industries, Inc. Circuits primarily intended for use in desoldering tools. 4,215,268, Cl. 219-507.000.

Di Pino, Duccio: *See*—
Cordaro, Giovanni; Dall'Olio, Cristiano; Di Pino, Duccio; and Guarene, Eugenio, 4,215,348, Cl. 370-97.000.

Di Rosa, Gaetano, to F.A.T.A.-Fabbrica Apparecchi di Sollevamento e Trasporto ed Affini S.p.A. Machine for the automatic manufacture of mixtures of different kinds of caoutchouc intended to form part of a filler mixture. 4,214,640, Cl. 177-70.000.

DiSanzo, Carmine P., to FMC Corporation. Nematicidal phosphorodithioate. 4,215,115, Cl. 424-216.000.

Dixon, Jack B., to Purdue Research Foundation. Flame ionization detector. 4,215,090, Cl. 422-54.000.

Dobson, Richard A.; and O'Connor, John R., to Sterling Drug Inc. Method of alleviating diseases by cell-mediated immune modulation. 4,215,137, Cl. 424-274.000.

Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See*—
Srock, Rainer, 4,214,788, Cl. 296-39.00R.

Dodds, Gary M.: *See*—
Dominy, David A.; and Dodds, Gary M., 4,214,768, Cl. 280-809.000.

Doi, Toshitada; and Ito, Takashi, to Sony Corporation. Digital signal transmission method. 4,215,335, Cl. 371-69.000.

Dominy, David A.; and Dodds, Gary M., to Tracker Designs, Ltd. Shield for skateboard truck axle housing. 4,214,768, Cl. 280-809.000.

Donaldson Company, Inc.: *See—*
Brenholt, David L., 4,214,882, Cl. 55-302.000.
Christophersen, Steve; and Neaman, Raymond G., 4,215,079, Cl. 261-36.00R.

Donermeyer, Donald D.; and Martins, Joseph G., to Monsanto Company. Cavity filling with a hot melt adhesive composition. 4,215,159, Cl. 427-142.000.

Dorawala, Tansukhlal G.; and Reinhard, Russell R., to Texaco Inc. Steam dealkylation catalyst and a method for its activation. 4,215,018, Cl. 252-466.00J.

Dorsemaine, Maurice J.: *See—*
Ribier, Jean G.; Dorsemaine, Maurice J.; and Sauvage, Bernard J., 4,215,080, Cl. 261-111.000.

Dostourian, Harry, to United States of America, Army. Keeper for load carrying equipment. 4,214,686, Cl. 224-252.000.

Douty, Donald L.; and Elgin, Robert J., to United States Steel Corporation. Seal for railroad car hopper doors. 4,214,759, Cl. 277-12.000.

Dow Chemical Company, The: *See—*
Arrington, Jack P.; and Wade, Luke L., 4,215,129, Cl. 424-272.000.
Garrett, Walter L.; and Czerepinski, Ralph G., 4,214,531, Cl. 101-451.000.
Heikel, Henrik R.; and Leddy, James J., 4,214,971, Cl. 204-290.00F.
Park, Chung P., 4,215,202, Cl. 521-81.000.
Rogers, Richard B.; Carson, Chrislyn M.; and Ehr, Robert J., 4,215,127, Cl. 424-269.000.
Saunders, Frank L.; and Meyer, Victor E., 4,215,029, Cl. 260-33.8UA.

Downing, Harold A., to Collins Industries, Inc. Retractable rail for a vehicle lift. 4,214,849, Cl. 414-545.000.

Drabek, Jozef, to Ciba-Geigy Corporation. 4-Alkyl- and 4-allyl-mercapto-, -sulfinyl- and -sulfonyl-methyl-2-amino-6-N,N-dimethylcarbamoyloxy-pyrimidines, processes for producing them, compositions containing these pyrimidines, and the use thereof for controlling insect pests. 4,215,122, Cl. 424-251.000.

Drake, Charles A.; and Murtha, Timothy P., to Phillips Petroleum Company. Ruthenium-cobalt-gold catalyst for hydrogenation of unsaturated dinitriles. 4,215,019, Cl. 252-466.00B.

Dravo Corporation: *See—*
Clemens, Ogden A., 4,214,987, Cl. 210-44.000.

Dresser Industries, Inc.: *See—*
Gorgens, Joseph E.; Kipp, Frederick M.; and Bissell, Robert D., 4,214,486, Cl. 73-738.000.
Upton, Thomas E., 4,214,629, Cl. 166-129.000.
Winsor, Jack O.; and Thompson, Neville, 4,214,445, Cl. 60-486.000.

Drumm, Arthur E., to Marysville Rotary Broom Service, Inc. Rotary broom core assemblage. 4,214,339, Cl. 15-179.000.

Druskin, Barry S.; Stumpp, Robert A.; and Muccio, Nora M. Three way garden tool. 4,214,538, Cl. 111-95.000.

Dub, Vladimir S.: *See—*
Balandin, Jury F.; Badanin, Vladimir I.; Gorynin, Igor V.; Gluskin, Lev Y.; Zvezdin, Jury I.; Nikolaev, Vladimir A.; Parshin, Anatoly M.; Zorev, Nikolai N.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Markov, Sergei I.; Sobolev, Jury V.; and Kozlov, Valentin I., 4,214,950, Cl. 176-87.000.

Dudek, Dennis A., to Anderson Company of Indiana, The. Arm adaptor for hook-type blade. 4,214,343, Cl. 15-250.320.

Duncan, Carolyn L.: *See—*
Duncan, William D.; and Duncan, Carolyn L., 4,214,345, Cl. 17-11.000.

Duncan Creations, Inc.: *See—*
Duncan, William D.; and Duncan, Carolyn L., 4,214,345, Cl. 17-11.000.

Duncan, William D.; and Duncan, Carolyn L., to Duncan Creations, Inc. Machine for severing poultry into predetermined portions. 4,214,345, Cl. 17-11.000.

Du Pont de Nemours, E. I., and Company: *See—*
Bockrath, Richard E., 4,215,227, Cl. 568-706.000.
Cherkofsky, Saul C.; and Sharpe, Thomas R., 4,215,135, Cl. 424-273.00B.
Del Bianco, Matthew A., 4,214,936, Cl. 156-302.000.
Forsythe, Jesse G., Jr.; Johnson, Donald R.; and St. Onge, Linda M., 4,214,993, Cl. 210-282.000.
Garth, Bruce H.; and Schmidt, Francis H., 4,214,876, Cl. 44-66.000.
Glaeser, Hans H., 4,214,913, Cl. 106-300.000.
Grantham, Gary D., 4,215,145, Cl. 424-324.000.
Hargreaves, Chester A., II; Harris, Alexander T.; and Schulze, Robert A., 4,215,078, Cl. 260-655.000.
Harris, Alexander T.; and Putman, Charles R., 4,215,095, Cl. 423-240.000.
Levitt, George, 4,214,890, Cl. 71-90.000.
Manger, Charles W.; Fickes, Michael G.; and Long, John W., 4,215,193, Cl. 430-291.000.
Middleton, William J., 4,215,044, Cl. 260-239.30D.
Strolle, Clifford H., 4,215,023, Cl. 260-22.0CB.
Wolf, Anthony D., 4,214,891, Cl. 71-92.000.
Wysong, Robert D., 4,215,169, Cl. 428-220.000.

Durakis, Manuel A.; and Reiser, John R., to General Cable Corporation. Method of making flame retardant EPR unipass telephone drop wire. 4,215,086, Cl. 264-135.000.

Durand, Pierre; Charlon, Pierre; and Jouffroy, Guy, to Societe Chimique des Charbonnages-CdF Chimie. Process for the polymerization and copolymerization of ethylene, using a gas injection device. 4,215,207, Cl. 526-64.000.

Durant, Graham J.; and Ganellin, Charon R., to Smith Kline & French Laboratories Limited. Pyridyl ureas, thioureas and guanidines. 4,215,125, Cl. 424-263.000.

Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., to Smith Kline & French Laboratories Limited. Alkoxy pyridine compounds. 4,215,126, Cl. 424-263.000.

Durkee, John E., to Emerson Electric Co. Electronic chime. 4,215,339, Cl. 340-384.00E.

Durlarch, Jean P., to Cooperation Pharmaceutique Francaise. Insoluble metal salts of N-acetyl-tryptophane and use thereof. 4,215,136, Cl. 424-274.000.

Dynaloc Corporation: *See—*
Conrad, Rene A., 4,214,488, Cl. 474-148.000.

Dynamidon-Koppers Industriekeramik GmbH: *See—*
Baumgart, Wolfgang, 4,214,910, Cl. 106-58.000.

E-Systems, Inc.: *See—*
Gordy, Robert S.; and Sanders, David E., 4,215,239, Cl. 375-114.000.

Ealing Corporation, The: *See—*
Dickey, Herbert C., 4,214,388, Cl. 40-159.000.

Early, Judson H.: *See—*
Off, Joseph W. A.; Early, Judson H.; and Greer, William B., 4,214,933, Cl. 156-238.000.

Eastman Kodak Company: *See—*
Battaglia, Charles J.; Chang, Jack C.; and Daniel, Daniel S., 4,214,968, Cl. 204-195.00M.
Phlipot, Georges A.; Haeck, Jacques R. G.; and Kempen, Simone J., 4,215,041, Cl. 260-141.000.
Ponticello, Ignazio S.; Hollister, Kenneth R.; and Tuites, Richard C., 4,215,195, Cl. 430-496.000.
Reesen, Jorgen, 4,214,831, Cl. 355-3.00R.

Ebauches S.A.: *See—*
Addor, Francis, 4,215,314, Cl. 328-55.000.

Eberle, Gunter F., to Vecta Contract, Inc. Furniture base. 4,214,725, Cl. 248-188.700.

Eckerline, Charles A.: *See—*
Planes, Felipe; Eckerline, Charles A.; and Erickson, Gordon A., 4,214,646, Cl. 181-287.000.

Ecolaire Incorporated: *See—*
Raseley, LeRoy J.; Collier, Samuel J.; and McCarty, Henry G., 4,214,883, Cl. 55-426.000.

Edblad, Warren A.: *See—*
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; Jones, F. David; Edblad, Warren A.; and Wallace, Frank E., 4,215,406, Cl. 364-468.000.

Edelberg, Norman L.: *See—*
Kaplan, Julius F.; Edelberg, Norman L.; and Davis, Chester A., 4,214,596, Cl. 132-7.000.

Edmundson, Gordon A.: *See—*
Schopp, Fredrick R.; and Edmundson, Gordon A., 4,214,663, Cl. 209-552.000.

Edwards, Charles E. H.: *See—*
Richter, Arnold A.; and Edwards, Charles E. H., 4,214,534, Cl. 102-215.000.

Edwards, David, Jr.; and Schneider, William, to United States of America, Energy. Gaseous trace impurity analyzer and method. 4,214,473, Cl. 73-23.000.

Edwin, Allan I.; and Katz, Harold W., to Minnesota Mining and Manufacturing Company. Adaptive path following motion control system for welding head assembly. 4,215,299, Cl. 318-574.000.

Ehr, Robert J.: *See—*
Rogers, Richard B.; Carson, Chrislyn M.; and Ehr, Robert J., 4,215,127, Cl. 424-269.000.

Eichweber, Kurt, to Precitronic Gesellschaft fur Feinmechanik und Electronic mbH. Variable optical transmitter. 4,215,270, Cl. 250-201.000.

Eidenschink, Rudolf: *See—*
Pohl, Ludwig; Eidenschink, Rudolf; Krause, Joachim; and Weber, Georg, 4,214,819, Cl. 350-334.000.

Eissel, Horst E., to Stommel & Voos Stahlstempelfabrik. Punch for punching markings into rolled material. 4,214,520, Cl. 101-4.000.

Ejiri, Masakazu; and Ueda, Hirotada, to Hitachi, Ltd. Digital pattern display system. 4,215,343, Cl. 340-711.000.

Eldon Industries, Inc.: *See—*
Dinkel, Ernst J., 4,215,268, Cl. 219-507.000.

Electric Power Research Institute, Inc.: *See—*
Kimblin, Clive W.; Heberlein, Joachim V. R.; Slade, Paul G.; Voshall, Roy E.; and Holmes, Francis A., 4,215,255, Cl. 200-144.00B.

Elgin, Robert J.: *See—*
Douty, Donald L.; and Elgin, Robert J., 4,214,759, Cl. 277-12.000.

Elhaus, Friedrich W. Circular saw. 4,214,493, Cl. 83-100.000.

Ellis, Frederick R. Brush rake. 4,214,429, Cl. 56-377.000.

Ellis, Glynn A. Cutter tool with a plurality of hard cutting teeth. 4,214,499, Cl. 83-855.000.

Elphingstone, Eugene A.; Misak, Marvin D.; and Briscoe, James E., to Halliburton Company. Methods of treating subterranean well formations. 4,215,001, Cl. 252-8.55C.

Elson, Arthur M., to Dayco Corporation. Hose construction with electrical conductor for dissipating static electricity and method of making same. 4,215,384, Cl. 361-215.000.

Emerson Electric Co.: *See—*
Durkee, John E., 4,215,339, Cl. 340-384.00E.
Henderson, David L., 4,214,921, Cl. 148-6.350.
Lewis, John G., 4,215,285, Cl. 310-90.000.

Emhart Industries, Inc.: *See—*
Dahms, Francis A., 4,214,494, Cl. 83-150.000.
Dahms, Francis A., 4,214,497, Cl. 83-640.000.

EMM Semi: *See*—
Clark, Kenneth L.; Leach, George S.; and Howard, Robert W., 4,214,917, Cl. 148-1.500.

Enders, George E., to NRM Corporation. Tire building machine. 4,214,939, Cl. 156-398.000.

Endo, Toshihiko: *See*—
Arita, Koji; Chiji, Masahiro; Asami, Takayoshi; Karaki, Yasuhumi; and Endo, Toshihiko, 4,214,925, Cl. 148-127.000.

Energy Mines and Resources Canada: *See*—
Ranganathan, Ramaswami; Denis, Jean-Marie D.; and Pruden, Barry B., 4,214,977, Cl. 208-108.000.

Engel, John F., to FMC Corporation. Arylthiovinylcyclopropanecarboxylate intermediates. 4,215,069, Cl. 260-465.00D.

Engelhard Minerals & Chemicals Corporation: *See*—
Kennedy, James V.; and Dight, Lawrence B., 4,214,978, Cl. 208-120.000.

English Clays Lovering Pochin & Company, Limited: *See*—
Broad, Bernard H., 4,214,991, Cl. 210-232.000.
Watson, James H. P.; and Jones, James P. E., 4,214,986, Cl. 210-42.00S.

Enikolopov, Nikolai S.: *See*—
Ivanchev, Sergei S.; Enikolopov, Nikolai S.; Polozov, Boris V.; Syrov, Anatoly A.; Primachenko, Oleg N.; and Polyakov, Zorislav N., 4,214,914, Cl. 106-308.00Q.

Environmental Research Institute of Michigan: *See*—
Holsztynski, Wlodzimierz; and Wilson, Stephen S., 4,215,401, Cl. 364-200.000.

Eppenger, Frank L.: *See*—
Pinkney, Harry D., Jr., 4,215,241, Cl. 179-1.0VC.

Erickson, Gordon A.: *See*—
Planes, Felipe; Eckerline, Charles A.; and Erickson, Gordon A., 4,214,646, Cl. 181-287.000.

Eriksson, Bertil F. H.; Helgstrand, Ake J. E.; Misiorny, Alfons; Stening, Goran B.; and Stridh, Stig-Ake A., to Astra Lakemedel Aktiebolag. Method for combating virus infections. 4,215,113, Cl. 424-212.000.

ESB Inc.: *See*—
Bergum, Bernard C.; Bredland, Alf M.; and Paulson, John W., 4,215,189, Cl. 429-217.000.

Escher Wyss Limited: *See*—
Lehmann, Rolf, 4,214,354, Cl. 29-116.0AD.

Etablissments Bobard Jeune: *See*—
Bobard, Charles E.; Dalaunay, Just M.; and Darcy, Raymond M., 4,214,427, Cl. 56-330.000.

Etablissements Carpano & Pons: *See*—
Pradillon, Michel, 4,214,602, Cl. 137-119.000.

Eto, Hirozumi: *See*—
Takahashi, Takeyoshi; Eto, Hirozumi; and Yoshioka, Osamu, 4,215,049, Cl. 260-343.30R.

Etudes Petrolieres Marines: *See*—
Le Garfe, Roger J.; Pignal, Edmond; and Magloire, Charles J., 4,214,692, Cl. 228-44.10R.

Eurographics Holding, N. V.: *See*—
Vilaprinyo Oliva, D. Entique, 4,215,170, Cl. 428-328.000.

Evans, Donald J., to Molins Machine Company, Inc. Snubbing apparatus. 4,214,744, Cl. 271-202.000.

Evelyn, George B.: *See*—
James, Varnell L.; and Evelyn, George B., 4,214,610, Cl. 137-597.000.

Exxon Research & Engineering Co.: *See*—
Amick, James A.; Milewski, John V.; and Wright, Franklin J., 4,214,920, Cl. 148-1.500.
Buckley, Donald J.; Thaler, Warren A.; and Kennedy, Joseph P., 4,215,022, Cl. 260-5.000.
Kmak, Walter S., 4,214,976, Cl. 208-48.00R.
Langer, Arthur W., Jr., 4,215,014, Cl. 252-429.00B.
Van Auken, Richard L., 4,214,932, Cl. 156-187.000.

Eytcheson, Charles T., to General Motors Corporation. Power semiconductor device assembly having a lead frame with interlock members. 4,215,360, Cl. 357-70.000.

F.A.T.A.-Fabbrica Apparecchi di Sollevamento e Trasporto ed Affini S.p.A.: *See*—
Di Rosa, Gaetano, 4,214,640, Cl. 177-70.000.

F. D. Rich Housing Corp.: *See*—
Rich, Frank D., Jr., 4,214,408, Cl. 52-79.100.

Fabry, Gyorgy; and Takacs, Istvan, to Richter Gedeon Vegyeszeti Gyar Rt. Packing of equipment for the purpose of contacting mainly gaseous and liquid mediums. 4,215,083, Cl. 261-155.000.

Fagelman, Jacob. Dental clamp. 4,214,870, Cl. 433-40.000.

Fansteel Inc.: *See*—
Kraemer, Rolf H., 4,214,846, Cl. 407-114.000.
Kraemer, Rolf H., 4,214,847, Cl. 407-114.000.

Fantl, Jiri: *See*—
Pavek, Miloslav; Novacek, Miroslav; Fantl, Jiri; Kara, Jan; and Kasparek, Zdenek, 4,214,352, Cl. 28-254.000.

Fanwall Corporation, The: *See*—
Pickett, William H., 4,214,411, Cl. 52-144.000.

Farrand, John E.: *See*—
Prager, Jay M.; Sadlow, Joseph F.; Farrand, John E.; Boissevain, Thomas A.; and Gonzales, Roman Y., 4,215,386, Cl. 361-394.000.

Faulconer, Harry A. Methods of joining conductors. 4,214,805, Cl. 339-198.00G.

Fava, Giulio, to RIV - SKF Officine di Villar Perosa S.p.A. Axial-type sealing device arranged to provide the seal between a stationary and a rotatable element. 4,214,764, Cl. 277-935.00D.

Feature Film Services: *See*—
Davidson, Richard A., 4,215,366, Cl. 358-124.000.

Federal Screw Works: *See*—
Ostrowski, Carl L., 4,215,240, Cl. 179-1.0SM.

Fedorchak, Mary A.: *See*—
Gingerich, Richard G. W.; Vanderpool, Clarence D.; Fedorchak, Mary A.; Ritsko, Joseph E.; and Cheresnowsky, Michael J., 4,214,895, Cl. 75-0.5AA.

Feecon Corporation: *See*—
Gagliardo, John P., 4,214,630, Cl. 169-18.000.

Fein, Richard S., to Texaco Inc. Water-based phosphonate lubricants. 4,215,002, Cl. 252-32.500.

Fekete, Simon O.: *See*—
Michal, Eugene J.; Fekete, Simon O.; and Roorda, H. Jan, 4,214,901, Cl. 75-119.000.

Felsher, Hal C.; Pollak, Fred H.; and Bradley, Arthur. Thin film photovoltaic converter and method of preparing same. 4,214,916, Cl. 136-89.0SJ.

Fendler, George W.: *See*—
Albus, Francis E.; and Fendler, George W., 4,214,375, Cl. 34-10.000.

Ferag AG: *See*—
Meier, Jacques, 4,214,743, Cl. 271-182.000.

Fernandez, Joseph L.: *See*—
Haber, Terry M.; and Fernandez, Marlin D., 4,214,753, Cl. 273-59.00R.

Fernandez, Marlin D.: *See*—
Haber, Terry M.; and Fernandez, Marlin D., 4,214,753, Cl. 273-59.00R.

Ferrando, William A.; and Sutula, Raymond A. Lightweight battery electrode. 4,215,190, Cl. 429-222.000.

Ferree, Kenneth B. Harness device. 4,214,420, Cl. 54-35.000.

Ferres, Harry, to Beecham Group Limited. Penicillin esters and their preparation. 4,215,120, Cl. 424-250.000.

Feth, Georg: *See*—
Richter, Carl; and Feth, Georg, 4,215,220, Cl. 548-341.000.

Fey, Maurice G.: *See*—
Wolf, Charles B.; Meyer, Thomas N.; Fey, Maurice G.; and Harvey, Francis J., II, 4,214,736, Cl. 266-200.000.

Feyen, Peter: *See*—
Preiss, Michael; Konig, Hans-bodo; Metzger, Karl G.; and Feyen, Peter, 4,215,118, Cl. 424-248.400.

Fickes, Michael G.: *See*—
Manger, Charles W.; Fickes, Michael G.; and Long, John W., 4,215,193, Cl. 430-291.000.

Fieldcrest Mills, Inc.: *See*—
Zeigler, George E., Jr.; Sumpter, Charles B., Jr.; and Wortham, Carl A., 4,214,541, Cl. 112-262.300.

Figg, Anthony V. J., to Norprint Limited. Sensing and locking devices. 4,214,938, Cl. 156-361.000.

Filss, Peter, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Device for cleaning hot gases. 4,214,881, Cl. 55-228.000.

Filtrol Corporation: *See*—
Alafandi, Hamid; and Stamires, Dennis, 4,215,016, Cl. 252-455.00Z.

Findeis, Gunter; Zahn, Wolfgang; and Weber, Klaus, to AGFA-Gevaert, A.G. Photographic copying machine. 4,214,834, Cl. 355-46.000.

Fine, Jonathan E.; and Sewell, Clinton J., to United States of America, Army. Annular alternator for artillery. 4,214,533, Cl. 102-209.000.

Finley, Joseph H.; and Blumbergs, John H., to FMC Corporation. Peroxygen bleaching and compositions therefor. 4,215,003, Cl. 252-99.000.

Firmin, Herman P. Fishing lures. 4,214,396, Cl. 43-42.240.

Fischer, Artur. Structural element of an assembly kit. 4,214,404, Cl. 46-26.000.

Fischer, Artur. Arrangement for anchoring a mounting element in a hole of a supporting structure. 4,214,416, Cl. 52-704.000.

Fischer, Karin: *See*—
Brunner, Heinrich; and Fischer, Karin, 4,215,405, Cl. 364-436.000.

Fischer & Porter Co.: *See*—
Schmoock, Roy F., 4,214,477, Cl. 73-861.120.

Fischer, Ulf; Schneider, Fernand; and Zurflueh, Rene, to Hoffmann-La Roche Inc. Carbamic acid derivatives. 4,215,139, Cl. 424-300.000.

Fitzgerald, Harry H.; and Fitzgerald, Robert G. Apparatus and method for ignition identification of internal combustion engines. 4,214,389, Cl. 40-316.000.

Fitzgerald, Robert G.: *See*—
Fitzgerald, Harry H.; and Fitzgerald, Robert G., 4,214,389, Cl. 40-316.000.

Flaherty, Thomas W., to Allis-Chalmers Corporation. Trap-port for rotary kilns. 4,214,707, Cl. 239-553.500.

Flamig, Hans: *See*—
Schiel, Christian; and Flamig, Hans, 4,214,949, Cl. 162-352.000.

Fleischer, Henry. Coupling device. 4,214,728, Cl. 251-149.200.

Fleming, Joseph W.: *See*—
Boyd, Robert L.; and Fleming, Joseph W., 4,215,383, Cl. 361-210.000.

Flory, Robert E.; and Nelson, Mark R., to RCA Corporation. Memory addressing system for automatic setup TV camera system. 4,215,368, Cl. 358-139.000.

Flowers, Ralph G., to General Electric Company. Insulating coating for transformer wires. 4,215,174, Cl. 428-375.000.

FMC Corporation: *See*—
DiSanzo, Carmine P., 4,215,115, Cl. 424-216.000.
Engel, John F., 4,215,069, Cl. 260-465.00D.
Finley, Joseph H.; and Blumbergs, John H., 4,215,003, Cl. 252-99.000.

Foldenauer Equipment Co., Inc.: *See*—
Petsche, Lee E., 4,214,518, Cl. 99-535.000.

Fontainas, Luc M.: *See*—
Verhulst, Dirk E. V.; Maes, Robert H.; and Fontainas, Luc M., 4,214,897, Cl. 75-11.000.

Forano Limitee: *See*—
Brisson, Maurice J., 4,214,616, Cl. 144-2.00Z.

Ford, Cynthia A. Dynamic shoulder, forearm, wrist and hand support. 4,214,579, Cl. 128-94.000.

Ford Motor Company: *See*—
Barton, David W., 4,214,447, Cl. 60-525.000.
Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., 4,214,801, Cl. 339-59.00R.
Chattha, Mohinder S., 4,215,204, Cl. 525-161.000.
Maxwell, Mary E.; and Froats, Ronald F., 4,214,472, Cl. 73-23.000.

Forget, Lawrence E.; Gdula, Robert A.; and Hollis, Joseph C., to International Business Machines Corporation. Selective reactive ion etching of polysilicon against SiO_2 utilizing SF_6-Cl_2-inert gas etchant. 4,214,946, Cl. 156-643.000.

Forminfan, S.A.: *See*—
Camacho, Carlos J., 4,214,325, Cl. 5-99.00B.

Forsythe, Jesse G., Jr.; Johnson, Donald R.; and St. Onge, Linda M., to Du Pont de Nemours, E. I., and Company. Apparatus for separating fluids. 4,214,993, Cl. 210-282.000.

Foundation for the Medical Research on the Traffic Accident and Disaster: *See*—
Sato, Kensuke; and Ono, Kenji, 4,214,591, Cl. 128-731.000.

Foye, John J.; and Harris, Jerry F., to Kaiser Aluminum & Chemical Corporation. Method of and mold for DC casting. 4,214,624, Cl. 164-89.000.

Frame, Charles W.: *See*—
Rickrode, Jack A.; and Frame, Charles W., 4,214,363, Cl. 29-802.000.

Franconville, Gerard: *See*—
Riollet, Gilbert; and Franconville, Gerard, 4,214,452, Cl. 60-697.000.

Frank, Arlen W., to United States of America, Agriculture. Tris(N-carbalkoxylaminomethyl)phosphine oxides and sulfides. 4,214,873, Cl. 8-116.00P.

Franke, Rudiger, to DEMAG Aktiengesellschaft. Bucket wheel excavator with vibrating buckets. 4,214,386, Cl. 37-190.000.

Franks, Neal E., to Akzona Incorporated. Regenerated cellulose containing cross linked sodium lignate or sodium lignosulfonate. 4,215,212, Cl. 536-57.000.

Franks, Neal S., to Deep Oil Technology, Inc. Remotely controlled maneuverable tool means and method for positioning the end of a pipe string in offshore well operations. 4,214,842, Cl. 405-191.000.

Franzen, Jochen, to Varian Mat GmbH. Method and apparatus for the comparative determination of an unknown mass. 4,215,411, Cl. 364-527.000.

Freeze, Baxter P., to Commonwealth Hosiery Mills, Inc. Method for processing socks. 4,214,331, Cl. 8-150.000.

French, Robert J.: *See*—
Crossman, Richard L.; and French, Robert J., 4,214,650, Cl. 188-196.00R.

Frey, Raymond A. High efficiency switching circuit. 4,215,309, Cl. 324-158.00D.

Fridkin, Matityahu: *See*—
Patchornik, Avraham; Warshawsky, Abraham; Fridkin, Matityahu; and Kalir, Rami, 4,215,219, Cl. 546-179.000.

Friebe, Walter-Gunar: *See*—
Ross, Carl H.; Friebe, Walter-Gunar; Kampe, Wolfgang; Bartsch, Wolfgang; and Roesch, Egon, 4,215,134, Cl. 424-273.00B.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See*—
Kriegel, Ernst; Radke, Dietrich; Klein, Hans; and Arbeletche, Carlos, 4,215,101, Cl. 423-659.000.

Friedl, V. L.; and Mascetti, B. Barbecue oven. 4,214,516, Cl. 99-421.00P.

Friedman, Moshe, to United States of America, Navy. Collective particle accelerator. 4,215,291, Cl. 315-5.410.

Froats, Ronald F.: *See*—
Maxwell, Mary E.; and Froats, Ronald F., 4,214,472, Cl. 73-23.000.

Fryda, Georg: *See*—
Bruckl, Konrad; and Fryda, Georg, 4,214,733, Cl. 339-274.000.

Fuchs, Rainer; Hammann, Ingeborg; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Combating insects and acarids with 4,4,5,5-tetrachloro-2,2-dimethyl-spiropentane-1-carboxylic acid 3-phenoxy-benzyl esters. 4,215,141, Cl. 424-304.000.

Fuchsman, Charles H.: *See*—
Hovey, Richard J.; Chu, Nori Y. C.; Piusz, Peter G.; and Fuchsman, Charles H., 4,215,010, Cl. 252-300.000.

Fugger, Adolf: *See*—
Wessels, Bernhard; and Fugger, Adolf, 4,214,621, Cl. 160-66.000.

Fuji Jukogyo Kabushiki Kaisha: *See*—
Yasuda, Hiroki, 4,215,093, Cl. 422-179.000.

Fuji Photo Film Co., Ltd.: *See*—
Ohashi, Saichiro, 4,214,829, Cl. 354-197.000.
Okita, Tsutomu; Satou, Masami; Hibino, Noburo; Katoh, Kazunobu; and Sawaguchi, Hiroshi, 4,215,030, Cl. 260-40.00R.

Fujimori, Fumio; Yokoi, Masatada; Ishikawa, Masakazu; Uemura, Hiroshi; and Shirai, Akira, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Antirattle spring for a disc brake of vehicles. 4,214,649, Cl. 188-73.500.

Fujioka, Yasuo; and Nakano, Kenichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust manifold for an internal combustion engine. 4,214,444, Cl. 60-322.000.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Kamiya, Takashi; Maeno, Shizuo; and Kitaura, Yoshihiko, 4,215,043, Cl. 260-239.30B.

Fujita, Masao: *See*—
Ueno, Yasuhiko; Saeki, Yoshito; Akiyama, Takuya; and Fujita, Masao, 4,214,892, Cl. 71-93.000.

Fujita, Yoshiji: *See*—
Ohnishi, Takashi; Fujita, Yoshiji; Ishiguro, Michihiro; and Nishida, Takashi, 4,215,230, Cl. 568-341.000.

Fujitsu Limited: *See*—
Hattori, Seizi; Nakagawa, Takehiko; Kobayashi, Kazuo; Makino, Koichi; and Matsuda, Wakatake, 4,215,158, Cl. 427-130.000.

Fujitsu Ten Limited: *See*—
Takayama, Kazuo, 4,215,312, Cl. 455-284.000.

Fukuda, Kiyoshi: *See*—
Hayashi, Hiroaki; Fukuda, Kiyoshi; Kubo, Hiroshi; Yoshikawa, Noriyasu; and Takada, Hiroshi, 4,215,234, Cl. 174-15.00C.

Fukuda, Takeo; Hanawa, Kazuhiko; and Urui, Kiyoshi, to Tokyo Shibaura Electric Co., Ltd. Switching apparatus selectively utilizing a regenerative repeater. 4,215,251, Cl. 179-170.00R.

Fukumoto, Masaru: *See*—
Iwanami, Yoshiyuki; Fukumoto, Masaru; and Funazaki, Mitsunori, 4,214,898, Cl. 75-12.000.

Funazaki, Mitsunori: *See*—
Iwanami, Yoshiyuki; Fukumoto, Masaru; and Funazaki, Mitsunori, 4,214,898, Cl. 75-12.000.

Funk, Andrew B.; and Williams, Max B., to W. R. Grace & Co. Process for preparing ammonium salts of alkanoic acids. 4,215,225, Cl. 562-606.000.

Furuta, Kenzi: *See*—
Sato, Masanobu; and Furuta, Kenzi, 4,215,378, Cl. 360-74.100.

Fussner, Paul: *See*—
Knapp, Heinrich; Wilfert, Thomas; Grassle, Alfred; and Fussner, Paul, 4,214,565, Cl. 123-179.00L.

Futaba Denshi Kogyo K.K.: *See*—
Hikida, Chuichi; Kishino, Takao; Mizohata, Tadashi; and Yamaura, Tatsuo, 4,215,290, Cl. 313-496.000.

Gaffar, Abdul; and Niles, Hollandra P., to Colgate-Palmolive Company. Anticalculus oral composition. 4,215,105, Cl. 424-57.000.

Gagliardo, John P., to Feecon Corporation. Fire fighting nozzle. 4,214,630, Cl. 169-18.000.

Gaidis, James M.: *See*—
Rosenberg, Arnold M.; and Gaidis, James M., 4,215,160, Cl. 427-177.000.

Gale, Geoffrey N.: *See*—
St. Louis, Jacques R.; Thumm, Manfred; and Gale, Geoffrey N., 4,214,364, Cl. 29-827.000.

Gallian, Claude E.: *See*—
Ullman, Michael K.; David, Stephen T.; and Gallian, Claude E., 4,215,104, Cl. 424-15.000.

Galloway, James H.; and Berman, Alby M., to Oxy Metal Industries Corp. Control logic for an inverter ripple controlled power system. 4,215,394, Cl. 363-137.000.

Galowitz, Dennis A. Ball holder. 4,214,684, Cl. 224-45.00L.

Gambro AB: *See*—
Losell, Ingvar E., 4,214,779, Cl. 285-93.000.

Games, John E.; and Bitterli, William W., to United Technologies Corporation. Temperature control of unoccupied living spaces. 4,215,408, Cl. 364-505.000.

Ganellin, Charon R.: *See*—
Durant, Graham J.; and Ganellin, Charon R., 4,215,125, Cl. 424-263.000.
Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., 4,215,126, Cl. 424-263.000.

Garcia de Lama, Javier: *See*—
Blanco, Jose R.; and Venero, Aurelio O., 4,214,963, Cl. 204-158.00R.

Gareus, Achim: *See*—
Bleidt, Rolf; Nasterlack, Joachim; Neubeck, Kurt; and Gareus, Achim, 4,214,474, Cl. 73-30.000.

Gargrave, Robert J. Connector and bearing devices. 4,214,793, Cl. 301-111.000.

Garner, Eugene F.: *See*—
Hamilton, Brian K.; Garner, Eugene F.; and Jackson, Charles, 4,214,438, Cl. 60-205.000.

Garrett, Walter L.; and Czerepinski, Ralph G., to Dow Chemical Company, The. Method of treating image-bearing lithographic plates. 4,214,531, Cl. 101-451.000.

Garron, Stephen A.; Sedlatschek, Robert; and Sudano, John J., to Singer Company, The. Electronically controlled top feed arrangement for a sewing machine. 4,214,543, Cl. 112-320.000.

Garth, Bruce H.; and Schmidt, Francis H., to Du Pont de Nemours, E. I., and Company. Corrosion inhibitor compositions. 4,214,876, Cl. 44-66.000.

Gaset, Antoine: *See*—
Kalck, Philippe; Poilblanc, Rene; and Gaset, Antoine, 4,215,066, Cl. 260-429.00R.

Gassowski, Jerzy R., to International Telephone and Telegraph Corporation. Advance and transfer mechanism for inked ribbon or the like. 4,214,838, Cl. 400-220.100.

Gat, Arnon; Gerzberg, Levy; and Gibbons, James F., to Stanford University. Method of forming polycrystalline semiconductor interconnections, resistors and contacts by applying radiation beam. 4,214,918, Cl. 148-1.500.

Gdula, Robert A.: *See*—
Forget, Lawrence E.; Gdula, Robert A.; and Hollis, Joseph C., 4,214,946, Cl. 156-643.000.

Gebhardt, Dale H.; and LaLonde, Carl H., to Van Huffel Tube Corporation. Space frame constuction. 4,214,409, Cl. 52-127.000.

Gee, Arthur; Largo, Edward J.; and Plesinger, Boris M., to Honeywell Information Systems Inc. Air distribution system. 4,214,706, Cl. 239-553.300.

Geiger, William N. Collapsible tripod with swivel lock. 4,214,724, Cl. 248-167.000.

Gelling, Helmut, to Precisa AG Rechenmaschinenfabrik, Firma. Rolling parallel printer. 4,214,521, Cl. 101-96.000.

General Battery Corporation: *See*—
Windisch, Lawrence; Nees, John; and Channing, Harry, 4,215,307, Cl. 320-2.000.

General Cable Corporation: *See*—
Durakis, Manuel A.; and Reiser, John R., 4,215,086, Cl. 264-135.000.

General Electric Company: *See*—
Boldebuck, Edith M.; and Banucci, Eugene G., 4,215,157, Cl. 427-116.000.
Burtnett, Thomas C., 4,215,237, Cl. 174-99.00B.
Campbell, Thomas C., 4,214,435, Cl. 60-39.050.
Casper, Russell L., 4,214,738, Cl. 267-141.100.
Coker, Thomas G.; LaConti, Anthony B.; Balko, Edward N.; and McGray, George B., 4,214,958, Cl. 204-98.000.
D'Atre, John D.; and Williamson, Dennis F., 4,215,304, Cl. 318-758.000.
D'Atre, John D.; and Plunkett, Allan B., 4,215,305, Cl. 318-803.000.
Flowers, Ralph G., 4,215,174, Cl. 428-375.000.
Lawrance, Richard J., 4,214,969, Cl. 204-255.000.
MacLeod, Edward N., 4,215,183, Cl. 429-30.000.
Monzel, Fred J.; and Bobo, Melvin, 4,214,796, Cl. 308-26.000.
Otto, Charles W., 4,215,287, Cl. 310-217.000.
Tuley, Eugene N.; Landis, Delmer H., Jr.; and Lozier, Paul W., 4,214,851, Cl. 415-115.000.
Tuley, Eugene N.; Landis, Delmer H., Jr.; and Lozier, Paul W., 4,214,852, Cl. 415-115.000.
Zelahy, John W., 4,214,355, Cl. 29-156.80B.

General Foods Corporation: *See*—
O'Rourke, Joseph D., 4,215,152, Cl. 426-579.000.

General Motors Corporation: *See*—
Eytcheson, Charles T., 4,215,360, Cl. 357-70.000.
Ornee, Michael W., 4,215,286, Cl. 310-155.000.

George, Douglas: *See*—
Leibowitz, Marshall; Willis, Alan; and George, Douglas, 4,214,820, Cl. 350-357.000.

Gerbruder Lodige Maschinenbau-Gesellschaft mbH: *See*—
Lucke, Roland; and Lipp, Eberhard, 4,214,376, Cl. 34-10.000.

Gerhard, Thomas, to Waggonfabrik Uerdingen A.G. Switch for a suspended railway vehicle. 4,214,535, Cl. 104-91.000.

Gerritsen, Jan W. Peristaltic type pump. 4,214,855, Cl. 417-477.000.

Gerzberg, Levy: *See*—
Gat, Arnon; Gerzberg, Levy; and Gibbons, James F., 4,214,918, Cl. 148-1.500.

Geurtsen, Friedrich H. H.; and Kebbel, Waldeman, to Dennison Manufacturing Company. Application of indicia to articles. 4,214,937, Cl. 156-361.000.

Gfeller, Fritz; and Wild, Daniel, to International Business Machines Corporation. Holographic optical satellite communication system. 4,214,807, Cl. 350-3.730.

Ghafghaichi, Majid: *See*—
Dalal, Hormazdyar M.; Ghafghaichi, Majid; Kasprzak, Lucian A.; and Wimpfheimer. Hans, 4,215,156, Cl. 427-84.000.

Gianakakos, Spiros; and Boardman, Franklin, to Johnson & Johnson. Orthopedic bandage having improved conformability. 4,214,578, Cl. 128-90.000.

Gibbons, James F.: *See*—
Gat, Arnon; Gerzberg, Levy; and Gibbons, James F., 4,214,918, Cl. 148-1.500.

Gibert, Alfred I.: *See*—
Bukhtiyarov, Ivan D.; Potanin, Veniamin G.; Alt, Viktor V.; Rakhmanin, Evgeny A.; Lyzlov, Vladimir M.; An, Viktor B.; Anikin, Valery P.; Koshevoi, Vladimir G.; Timonin, Nikolai G.; Zhdanov, Gennady P.; Gibert, Alfred I.; and Kolesnikov, Vladimir M., 4,215,404, Cl. 364-431.000.

Gibert, Henri: *See*—
Rios, Gilbert M.; Gibert, Henri; Crouzet, Jean; and Vincent, Jean-Claude, 4,215,151, Cl. 426-467.000.

Giddings, John C., to University of Utah. Steric field-flow fractionation. 4,214,981, Cl. 209-155.000.

Gilbreath, Rodney E.: *See*—
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; Jones, F. David; Edblad, Warren A.; and Wallace, Frank E., 4,215,406, Cl. 364-468.000.

Gildemeister Corpoplast: *See*—
Kleimenhagen, Gunter; Rosenkranz, Otto; Albrecht, Peter; Conow, Hans; Kother, Holger; Schmidt, Dieter; and Vogel, Klaus, 4,214,860, Cl. 425-149.000.

Gillespie, Richard R. Speed adjust. 4,214,437, Cl. 60-39.28R.

Gilson Brothers Company: *See*—
Davies, John W., III, 4,214,767, Cl. 280-5.00A.

Gingerich, Richard G. W.; Vanderpool, Clarence D.; Fedorchak, Mary A.; Ritsko, Joseph E.; and Cheresnowsky, Michael J., to GTE Sylvania Incorporated. Method for producing cobalt metal powder. 4,214,895, Cl. 75-0.5AA.

Gingerich, Richard G. W.: *See*—
Ritsko, Joseph E.; Gingerich, Richard G. W.; and Acla, Howard L., 4,214,894, Cl. 75-0.5AA.

Giovanni, Greco; and Tomassini, Maurizio. Process for making semiconductor devices passivated by an integrated heat sink. 4,214,953, Cl. 204-15.000.

Gipson, Robert M., to Texaco Development Corporation. Boride catalyst for epoxidizing olefinic compounds. 4,215,059, Cl. 260-348.290.

Gipson, Robert M., to Texaco Development Corporation. Boride catalyst for epoxidizing olefinic compounds. 4,215,060, Cl. 260-348.290.

Gipson, Robert M., to Texaco Development Corporation. Boride catalyst for epoxidizing olefinic compounds. 4,215,061, Cl. 260-348.290.

Giras, Theodore C.: *See*—
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; Jones, F. David; Edblad, Warren A.; and Wallace, Frank E., 4,215,406, Cl. 364-468.000.

Giraud, Georges J. L., to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Data-processing system which protects the secrecy of confidential data. 4,215,421, Cl. 364-900.000.

Girling Limited: *See*—
Taft, Philip A., 4,214,775, Cl. 280-708.000.

Giuffre, Luigi: *See*—
Spaziante, Placido M.; Giuffre, Luigi; Castoldi, Aldo; and Sioli, Giancarlo, 4,215,009, Cl. 252-184.000.

GKN Transmissions Ltd.: *See*—
Slack, Howard, 4,214,653, Cl. 192-48.700.

Glaeser, Hans H., to Du Pont de Nemours, E. I., and Company. Process for producing rutile TiO_2. 4,214,913, Cl. 106-300.000.

Glanzner, Gary C.: *See*—
Signorelli, John A.; and Glanzner, Gary C., 4,214,530, Cl. 101-415.100.

Glaser, Heinz: *See*—
Jochum, Friedrich; and Glaser, Heinz, 4,214,546, Cl. 114-270.000.

Glassman, Geraldine. Hair waving method and device. 4,214,597, Cl. 132-9.000.

Glessner, James S. Loom. 4,214,613, Cl. 139-33.000.

Gluskin, Lev Y.: *See*—
Balandin, Jury F.; Badanin, Vladimir I.; Gorynin, Igor V.; Gluskin, Lev Y.; Zvezdin, Jury I.; Nikolaev, Vladimir A.; Parshin, Anatoly M.; Zorev, Nikolai N.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Markov, Sergei I.; Sobolev, Jury V.; and Kozlov, Valentin I., 4,214,950, Cl. 176-87.000.

Gnida, Bernd; Simon, Gerhard; Buder, Eckart; and Schwartz, Hans-Jurgen, to Varta Batterie Aktiengesellschaft. Gas-tight galvanic cell. 4,215,187, Cl. 429-161.000.

Gobin, Donald L., to Roper Corporation. Catcher securement for rear bagger. 4,214,424, Cl. 56-202.000.

Godfrey, Dwaine A. Seal for adjacent plates. 4,214,760, Cl. 277-34.300.

Goldenberg, David A.: *See*—
Goldenberg, Max; and Goldenberg, David A., 4,215,373, Cl. 358-237.000.

Goldenberg, Max; and Goldenberg, David A. Television set projector. 4,215,373, Cl. 358-237.000.

Goldstein, Gideon; and Heavner, George, to Ortho Pharmaceutical Corporation. Peptides having ubiquitin-like activity. 4,215,111, Cl. 424-177.000.

Goldstein, Gideon; and Heavner, George, to Ortho Pharmaceutical Corporation. Tripeptides and methods. 4,215,112, Cl. 424-177.000.

Gomez, I. Luis; and Tokas, Edward F., to Monsanto Company. Molding compositions and process for preparing same. 4,215,024, Cl. 260-23.00S.

Gomez, I. Luis, to Monsanto Company. Process for preparing extruded pelleted products from molding compositions. 4,215,085, Cl. 264-15.000.

Gomez, Manuel D. Portable roll-up bug netting employing integral storage envelope. 4,214,318, Cl. 2-4.000.

Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; Jones, F. David; Edblad, Warren A.; and Wallace, Frank E., to Westinghouse Electric Corp. Digital computer monitored and/or operated system or process which is structured for operation with an improved automatic programming process and system. 4,215,406, Cl. 364-468.000.

Gomola, John W.; Wood, William G.; Jones, F. David; Wallace, Frank E.; and Marano, Ross T., to Westinghouse Electric Corp. Combined file and directory system for a process control digital computer system. 4,215,407, Cl. 364-468.000.

Gonder, Warren W. Collection of solar energy. 4,214,572, Cl. 126-425.000.

Gonzales, Roman Y.: *See*—
Prager, Jay M.; Sadlow, Joseph F.; Farrand, John E.; Boissevain, Thomas A.; and Gonzales, Roman Y., 4,215,386, Cl. 361-394.000.

Gonzalez Espinosa de Los Monteros, Emilio. Building structure. 4,214,413, Cl. 52-236.100.

Gonzalez R., Ricardo. Replaceable heel construction for shoes. 4,214,384, Cl. 36-42.000.

Goodall, Roger M.: *See*—
Pollard, Maurice G.; and Goodall, Roger M., 4,215,403, Cl. 364-424.000.

Goodyear Aerospace Corporation: *See*—
Crossman, Richard L.; and French, Robert J., 4,214,650, Cl. 188-196.00R.
Gordon, Maurice R. Sterility testing unit. 4,215,198, Cl. 435-31.000.
Gordy, Robert S.; and Sanders, David E., to E-Systems, Inc. Apparatus for the acquisition of a carrier frequency and symbol timing lock. 4,215,239, Cl. 375-114.000.
Gorgens, Joseph E.; Kipp, Frederick M.; and Bissell, Robert D., to Dresser Industries, Inc. Sealed casing for pressure gauge. 4,214,486, Cl. 73-738.000.
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Goto, Enami, to Miyaji, Kunihiko. Internal combustion engines. 4,214,567, Cl. 123-169.00C.
Goto, Yukio: *See*—
Kobayashi, Shigeo; Yoshihara, Nori; Nanbu, Kiyoji; and Goto, Yukio, 4,215,032, Cl. 260-40.00R.
Gould Inc.: *See*—
Kozacka, Frederick J., 4,215,331, Cl. 335-252.000.
Moore, Chad Z., 4,215,355, Cl. 346-155.000.
Grace, George A. Rotatable pipe coupling structure. 4,214,780, Cl. 285-134.000.
Graham, Elwood M., to M. H. Graham Corporation. Apparatus for cutting food. 4,214,714, Cl. 241-93.000.
Graham, Elwood M., to M. H. Graham Corporation. Rotary food cutting apparatus. 4,214,715, Cl. 241-93.000.
Grantham, Gary D., to Du Pont de Nemours, E. I., and Company. Miticidal, fungicidal, and ovicidal sulfenamides. 4,215,145, Cl. 424-324.000.
Gras, Rainer; and Schnurbusch, Horst, to Chemische Werke Huls Aktiengesellschaft. Method for coating of glass surfaces. 4,215,165, Cl. 428-35.000.
Grassle, Alfred: *See*—
Knapp, Heinrich; Wilfert, Thomas; Grassle, Alfred; and Fussner, Paul, 4,214,565, Cl. 123-179.00L.
Great Plains Manufacturing Incorporated: *See*—
Applequist, Roy E., 4,214,637, Cl. 172-484.000.
Greco, Nicholas P., to Koppers Company, Inc. Process for alkylating phenolic compounds to produce ortho- and para-monoalkylated phenols and 2,4- and 2,6-dialkylated phenols. 4,215,229, Cl. 568-804.000.
Greer, William B.: *See*—
Off, Joseph W. A.; Early, Judson H.; and Greer, William B., 4,214,933, Cl. 156-238.000.
Greve, Hans J. J.: *See*—
Borresen, Peter A.; and Greve, Hans J. J., 4,214,797, Cl. 312-257.00R.
Grey, David S.; and Wey, Robert A., to Corning Glass Works. Drawing optical waveguides by heating with laser radiation. 4,215,263, Cl. 219-121.00L.
Griffin, Groves L., Jr. Tool mounting assembly. 4,214,688, Cl. 224-197.000.
Griffith, Rex R. Three-point hitch adapter. 4,214,636, Cl. 172-450.000.
Grodde, Karl-Heinz: *See*—
Carter, Walter H.; Christopher, Charles A.; and Grodde, Karl-Heinz, 4,214,475, Cl. 73-59.000.
Gross, Glenn M., to Norlin Industries, Inc. Reverberation system. 4,215,242, Cl. 179-1.00J.
Grumman Aerospace Corporation: *See*—
Burhans, Walter R., Jr.; Ciccarello, James L.; and Stumpf, Charles H., 4,214,721, Cl. 244-135.00B.
GTE Laboratories Incorporated: *See*—
McKinzie, Howard; and Trickett, Elizabeth A., 4,215,155, Cl. 427-74.000.
GTE Products Corporation: *See*—
Borlaug, David J., 4,215,363, Cl. 358-21.00R.
Cheresnowsky, Michael J., 4,214,896, Cl. 75-0.5AA.
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GTE Sylvania Incorporated: *See*—
Gingerich, Richard G. W.; Vanderpool, Clarence D.; Fedorchak, Mary A.; Ritsko, Joseph E.; and Cheresnowsky, Michael J., 4,214,895, Cl. 75-0.5AA.
Guarene, Eugenio: *See*—
Cordaro, Giovanni; Dall'Olio, Cristiano; Di Pino, Duccio; and Guarene, Eugenio, 4,215,348, Cl. 370-97.000.
Gugnin, Eduard D.: *See*—
Kolpakov, Serafim V.; Gurkov, Zinovy L.; Bondarenko, Oleg L.; Valtsov, Vladimir V.; Pozhivanov, Alexandr M.; Gugnin, Eduard D.; Radilov, Stanislav V.; and Bogdanov, Alexandr A., 4,214,856, Cl. 425-60.000.
Gulf Research & Development Company: *See*—
Onopchenko, Anatoli; Sabourin, Edward T.; and Selwitz, Charles M., 4,215,226, Cl. 568-705.000.
Wu, Ching-Yong; and Swift, Harold E., 4,215,068, Cl. 260-464.000.
Gulf & Western Manufacturing Company: *See*—
Carrieri, Louis F., 4,214,496, Cl. 83-617.000.
Gulick, Joseph F.: *See*—
Jarrell, Edward C.; Marlow, Donald R.; Tetens, Howard B.; and Gulick, Joseph F., 4,215,347, Cl. 343-117.00R.
Gurkov, Zinovy L.: *See*—
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Gutleber, Frank S., to United States of America, Army. Self-adaptive mobile subscriber access system employing time division multiple accessing. 4,215,244, Cl. 370-116.000.
Gutmann, Gunter; and Benczur-Urmossy, Gabor, to Deutsche Automobilgesellschaft mbH, Firma. Nickel-oxide/hydrogen battery cells. 4,215,184, Cl. 429-101.000.
H. A. Schlatter AG: *See*—
Zollinger, Hans-Rudolf, 4,215,260, Cl. 219-53.000.
Haavie, Thor O.: *See*—
Krogstad, Ivar; Sandoy, Harry S.; and Haavie, Thor O., 4,214,545, Cl. 114-294.000.
Haber, Terry M.; and Fernandez, Marlin D., to Fernandez, Joseph L. Transparent article. 4,214,753, Cl. 273-59.00R.
Haberle, Norman: *See*—
Kaufmann, Rudolf; Braunling; Haberle, Norman; and Muller, Reinhard, 4,215,057, Cl. 260-347.500.
Haeck, Jacques R. G.: *See*—
Phlipot, Georges A.; Haeck, Jacques R. G.; and Kempen, Simone J., 4,215,041, Cl. 260-141.000.
Haendle, Joerg; and Sklebitz, Hartmut, to Siemens Aktiengesellschaft. X-ray diagnostics installation comprising an electronic transmission channel for the X-ray image. 4,215,365, Cl. 358-111.000.
Hager, Douglas F., to Procter & Gamble Company, The. Density separation process. 4,215,040, Cl. 260-123.500.
Haggar Company: *See*—
Off, Joseph W. A.; Early, Judson H.; and Greer, William B., 4,214,933, Cl. 156-238.000.
Hagiwara, Zenzi; Matsui, Sigeo; Sakaguchi, Susumu; and Yamanaka, Yoshio, to Shin-Etsu Chemical Co. Ltd.; and Osaka Oxygen Industries Ltd. Rare earth-containing alloys and method for purification of hydrogen gas therewith. 4,215,008, Cl. 252-184.000.
Hajos, Zoltan G.: *See*—
Chen, Robert H. K.; and Hajos, Zoltan G., 4,215,048, Cl. 260-340.600.
Hall, Jim; and Spector, George. Filter unit for a baseboard hot water heating system. 4,214,603, Cl. 137-199.000.
Haller, Ingo: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Plempel, Manfred; and Haller, Ingo, 4,215,131, Cl. 424-273.00R.
Halliburton Company: *See*—
Elphingstone, Eugene A.; Misak, Marvin D.; and Briscoe, James E., 4,215,001, Cl. 252-8.55C.
Hamilton, Brian K.; Garner, Eugene F.; and Jackson, Charles, to Allied Chemical Corporation. Pyrotechnic composition and method of inflating an inflatable device. 4,214,438, Cl. 60-205.000.
Hammann, Ingeborg: *See*—
Fuchs, Rainer; Hammann, Ingeborg; and Stendel, Wilhelm, 4,215,141, Cl. 424-304.000.
Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; and Homeyer, Bernhard, 4,215,132, Cl. 424-273.00P.
Hamon-Sobelco, S.A.: *See*—
Ribier, Jean G.; Dorsemaine, Maurice J.; and Sauvage, Bernard J., 4,215,080, Cl. 261-111.000.
Hampson, Edward A. Kaleidoscopic mobile. 4,214,808, Cl. 350-4.100.
Hanawa, Kazuhiko: *See*—
Fukuda, Takeo; Hanawa, Kazuhiko; and Urui, Kiyoshi, 4,215,251, Cl. 179-170.00R.
Hanesworth, Richard F.; Kim, Young D.; and Tolhurst, Gary A., to Ashland Oil, Inc. Furan binder composition. 4,215,206, Cl. 525-441.000.
Hanna Mining Company, The: *See*—
Rule, William T., 4,214,983, Cl. 209-166.000.
Hannum, Evelyn J. Earring with unitary fastener. 4,214,456, Cl. 63-12.000.
Hansmeyer, Kenneth. Heating system. 4,214,570, Cl. 126-121.000.
Harada, Shigehisa: *See*—
Tsuganezawa, Kunihiro; Kobayashi, Teruo; Harada, Shigehisa; Nishizawa, Yoichi; and Kusunose, Tomoya, 4,214,893, Cl. 75-0.5AA.
Harato, Takuo: *See*—
Inao, Jun-ichi; Yamada, Koichi; Harato, Takuo; and Kato, Hisakatsu, 4,215,094, Cl. 423-123.000.
Hardgrave, William D., to Otis Engineering Corporation. Actuator for wireline blowout preventer. 4,214,605, Cl. 137-495.000.
Hardwicke, Robert L.; and Ansteth, John H. Wheel adapter. 4,214,792, Cl. 301-36.00R.
Hargreaves, Chester A., II; Harris, Alexander T.; and Schulze, Robert A., to Du Pont de Nemours, E. I., and Company. Process for manufacturing chloroprene and 2,3-dichlorobutadiene-1,3. 4,215,078, Cl. 260-655.000.
Harri, Eugen; and Ruegger, Artur, to Sandoz Ltd. Antibiotic production. 4,215,199, Cl. 435-71.000.
Harris, Alexander T.; and Putman, Charles R., to Du Pont de Nemours, E. I., and Company. Process for the incineration of chlorinated organic materials. 4,215,095, Cl. 423-240.000.
Harris, Alexander T.: *See*—
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Harris, Jerry F.: *See*—
Foye, John J.; and Harris, Jerry F., 4,214,624, Cl. 164-89.000.

Hartman, Emil T., to Hartman, Ethel; and Helin, Charles, Estate of, Detroit Bank and Trust Company, executor, part interest to each. Permanent magnet propulsion system. 4,215,330, Cl. 335-306.000.

Hartman, Ethel: *See*—
Hartman, Emil T., 4,215,330, Cl. 335-306.000.

Harvey, Francis J., II: *See*—
Wolf, Charles B.; Meyer, Thomas N.; Fey, Maurice G.; and Harvey, Francis J., II, 4,214,736, Cl. 266-200.000.

Hatanaka, Toru; and Iizuka, Yoshitoku, to Honda Giken Kogyo Kabushiki Kaisha. Orientation of torch openings for prechamber engine. 4,214,559, Cl. 123-293.000.

Hattori, Seizi; Nakagawa, Takehiko; Kobayashi, Kazuo; Makino, Koichi; and Matsuda, Wakatake, to Fujitsu Limited; and Nippon Telegraph and Telephone Public Corporation. Magnetic recording medium and process for producing the same. 4,215,158, Cl. 427-130.000.

Hattori, Tadashi. Sprinkler head with heat sensitive cover release and valve release mechanism. 4,214,631, Cl. 169-57.000.

Hauser, Hans, to J. B. Foote Foundry Co., The. Drive for self-propelled lawn mowers. 4,214,641, Cl. 180-19.00R.

Hawrylo, Frank Z., to RCA Corporation. Apparatus for the deposition of a material from a liquid phase. 4,214,550, Cl. 118-712.000.

Hayashi, Henry T. Clamp-connector for joining three tubular members at corners. 4,214,841, Cl. 403-188.000.

Hayashi, Hiroaki; Fukuda, Kiyoshi; Kubo, Hiroshi; Yoshikawa, Noriyasu; and Takada, Hiroshi, to Tokyo Electric Power Company, The; and Sumitomo Electric Industries, Ltd. Natural circulation type evaporative cooling power cable line. 4,215,234, Cl. 174-15.00C.

Hayashi, Mamoru: *See*—
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Hayashi, Masaki; Shimoji, Katsuichi; and Arai, Yoshinobu, to Ono Pharmaceutical Co. Ltd. Prostaglandin analogues. 4,215,142, Cl. 424-305.000.

Heath, Forrest D.; and Hoctor, Rodney K., to Olman Heath Company. Cup-shaped coffee filter dispenser. 4,214,673, Cl. 221-259.000.

Heavner, George: *See*—
Goldstein, Gideon; and Heavner, George, 4,215,111, Cl. 424-177.000.
Goldstein, Gideon; and Heavner, George, 4,215,112, Cl. 424-177.000.

Heberlein, Joachim V. R.: *See*—
Kimblin, Clive W.; Heberlein, Joachim V. R.; Slade, Paul G.; Voshall, Roy E.; and Holmes, Francis A., 4,215,255, Cl. 200-144.00B.

Heidan, Klaus: *See*—
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Heidelberger Druckmaschinen Aktiengesellschaft: *See*—
Jeschke, Willi, 4,214,526, Cl. 101-183.000.

Heikel, Henrik R.; and Leddy, James J., to Dow Chemical Company, The. Electrode coating process. 4,214,971, Cl. 204-290.00F.

Heine, Friedrich W. Fireplace stove. 4,214,569, Cl. 126-77.000.

Heinzl, Joachim, to Siemens Aktiengesellschaft. Method of and apparatus for printed character transmission and reception. 4,215,238, Cl. 178-23.00R.

Heisinger, Robert F., to Bell Telephone Laboratories, Incorporated. Protector module for telephone circuits. 4,215,381, Cl. 361-124.000.

Helene Curtis Industries, Inc.: *See*—
Kaplan, Julius F.; Edelberg, Norman L.; and Davis, Chester A., 4,214,596, Cl. 132-7.000.

Helgstrand, Ake J. E.: *See*—
Eriksson, Bertil F. H.; Helgstrand, Ake J. E.; Misiorny, Alfons; Stening, Goran B.; and Stridh, Stig-Ake A., 4,215,113, Cl. 424-212.000.

Helin, Charles, Estate of: *See*—
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Hemsath, Klaus H.: *See*—
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Thekdi, Arvind C.; Hemsath, Klaus H.; Conybear, James G.; Vereecke, Frank J.; and Verhoff, Steven H., 4,214,869, Cl. 432-31.000.

Henderson, David L., to Emerson Electric Co. Method of manufacturing a corrosion resistant rotor assembly. 4,214,921, Cl. 148-6.350.

Henderson, David M.: *See*—
Adrams, Richard L.; and Henderson, David M., 4,215,324, Cl. 332-7.510.

Henke, Hermann: *See*—
Munk, Edmund; and Henke, Hermann, 4,214,861, Cl. 425-199.000.

Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA): *See*—
Krings, Peter; Huppertz, Josef; Latka, Herbert; Sperling, Gerhard; Schwuger, Milan J.; and Smolka, Heinz, 4,215,007, Cl. 252-174.250.

Henley, Ernest J. Apparatus for body massage using a fluidized bed apparatus. 4,214,576, Cl. 128-24.100.

Henmi, Zen-ichi; Kotaki, Akira; and Kitano, Takafumi, to Mitsui Toatsu Chemicals, Incorporated. Anti-ulcer pharmaceutical composition containing inositol hexasulfate aluminum or sodium aluminum salt as active ingredient. 4,215,143, Cl. 424-315.000.

Henry, Raymond W.; Burkett, Bobby G.; and Bunyard, Michael L., to Texas Instruments Incorporated. Intelligent programmable process control system. 4,215,396, Cl. 364-101.000.

Heppolette, Robert L.; Khan, Hamid I.; and McEwan, Ian H., to Canadian Industries Limited. Aqueous thermosettable coating compositions comprising aqueous copolymer latex, amine neutralized copolymer and melamine-formaldehyde resin. 4,215,027, Cl. 260-29.4UA.

Herbert, Glenn M.: *See*—
Redding, Thomas P.; Herbert, Glenn M.; and Caldwell, Alistair J., 4,214,746, Cl. 271-294.000.

Herenius, Frederik J., to Perkins Engines Limited. Marine engine manifold. 4,214,443, Cl. 60-321.000.

Hermann Berstorff Maschinenbau GmbH: *See*—
Anders, Dietmar, 4,214,859, Cl. 425-147.000.
Kolossow, Klaus-Dieter, 4,214,862, Cl. 425-204.000.
Woeckener, Willi; Pawelczyk, Werner; and Marquardt, Klaus-Dieter, 4,214,857, Cl. 425-141.000.

Hermes Precisa International S.A.: *See*—
Bacher, Eric, 4,214,837, Cl. 400-144.300.

Herr, John A.; and Jaffe, Wolfgang, to Singer Company, The. Position sensing device for electronic sewing machine. 4,214,539, Cl. 112-158.00E.

Hesston Corporation: *See*—
McMillen, Kenneth R., 4,214,422, Cl. 56-119.000.

Hetherington, Michael W., to Appliance Design Probe Inc. Telescoping hair curler. 4,215,264, Cl. 219-225.000.

Hetland, Philip R. Rider propelled boat. 4,214,547, Cl. 440-13.000.

Hewlett-Packard Company: *See*—
Kusters, John A., 4,215,308, Cl. 324-78.00D.
Mason, Martin K., 4,215,301, Cl. 318-603.000.

Hi-Draw Machinery Ltd.: *See*—
Hurst, Michael J., 4,214,470, Cl. 72-286.000.

Hibino, Noburo: *See*—
Okita, Tsutomu; Satou, Masami; Hibino, Noburo; Katoh, Kazunobu; and Sawaguchi, Hiroshi, 4,215,030, Cl. 260-40.00R.

Hikida, Chuichi; Kishino, Takao; Mizohata, Tadashi; and Yamaura, Tatsuo, to Futaba Denshi Kogyo K.K. Thick-film circuit device. 4,215,290, Cl. 313-496.000.

Hilleman, Maurice R.: *See*—
Buynak, Eugene B.; and Hilleman, Maurice R., 4,215,107, Cl. 424-89.000.

Hills, Richard E.: *See*—
McKibbin, Dean K.; Hills, Richard E.; Blackman, Joel; and Kuhs, Franklin A., 4,214,671, Cl. 220-219.000.

Hinds, Walter E. Linear stepping motor. 4,215,283, Cl. 310-14.000.

Hirose, Masayoshi: *See*—
Ozawa, Kiyomi; Ishii, Shigeru; Hayashi, Mamoru; Hirose, Masayoshi; and Nonaka, Ryoichi, 4,215,138, Cl. 424-282.000.

Hitachi, Ltd.: *See*—
Ejiri, Masakazu; and Ueda, Hirotada, 4,215,343, Cl. 340-711.000.
Inoue, Fumio; and Suzuki, Nobuyuki, 4,215,295, Cl. 315-408.000.
Misumi, Akira; Suzuki, Yukio; and Sunahara, Kazuo, 4,215,180, Cl. 428-553.000.
Sakaguchi, Minoru; Oishi, Kazuaki; Nakano, Seizo; and Kishi, Tuneo, 4,215,256, Cl. 200-148.00D.

Hock, Jules M.; and de Vries, Donald S., Jr. One-piece plastic piston. 4,214,507, Cl. 92-254.000.

Hoctor, Rodney K.: *See*—
Heath, Forrest D.; and Hoctor, Rodney K., 4,214,673, Cl. 221-259.000.

Hoechst Aktiengesellschaft: *See*—
Konig, Wolfgang, 4,215,037, Cl. 260-112.50R.
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Hoefke, Wolfgang: *See*—
Mentrup, Anton; Schromm, Kurt; Renth, Ernst-Otto; Reichl, Richard; Traunecker, Werner; and Hoefke, Wolfgang, 4,215,119, Cl. 424-248.500.

Hoffman, Richard A.: *See*—
Choyke, Wolfgang J.; and Hoffman, Richard A., 4,214,818, Cl. 350-310.000.

Hoffman, Thomas M. Method and apparatus for cutting clips off of the ends of sausages and the like. 4,214,492, Cl. 83-24.000.

Hoffmann-La Roche Inc.: *See*—
Bollag, Werner; Ruegg, Rudolf; and Ryser, Gottlieb, 4,215,215, Cl. 542-427.000.
Fischer, Ulf; Schneider, Fernand; and Zurflueh, Rene, 4,215,139, Cl. 424-300.000.

Hollis, Joseph C.: *See*—
Forget, Lawrence E.; Gdula, Robert A.; and Hollis, Joseph C., 4,214,946, Cl. 156-643.000.

Hollister, Kenneth R.: *See*—
Ponticello, Ignazio S.; Hollister, Kenneth R.; and Tuites, Richard C., 4,215,195, Cl. 430-496.000.

Hollyday, Robert D.; and McKinnon, Wayne E., to AMP Incorporated. Latching-ejector device. 4,214,800, Cl. 339-45.00M.

Hollyday, Robert D., to AMP Incorporated. Filtered adapter. 4,215,326, Cl. 333-182.000.

Holmes, Francis A.: *See*—
Kimblin, Clive W.; Heberlein, Joachim V. R.; Slade, Paul G.; Voshall, Roy E.; and Holmes, Francis A., 4,215,255, Cl. 200-144.00B.

Holpuch, Robert J.; Mathias, Robert G.; and Young, Alan C., to Marmon Company. Special effects circuit for an electronic organ. 4,214,502, Cl. 84-1.240.

Holsztynski, Wlodzimierz; and Wilson, Stephen S., to Environmental Research Institute of Michigan. Cellular digital array processor. 4,215,401, Cl. 364-200.000.

Hom, Gim P., to Texas Instruments Incorporated. Automatic end-of-scan control system for a programmable process controller with expandable memory. 4,215,397, Cl. 364-101.000.

Homeyer, Bernhard: *See*—
Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; and Homeyer, Bernhard, 4,215,132, Cl. 424-273.00P.
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Matsuda, Minoru, 4,214,644, Cl. 180-226.000.
Honeywell Inc.: *See*—
Corbero, Paul A., 4,215,272, Cl. 250-293.000.
Saathoff, Deidrich J.; and Venkatasetty, Hanumanthiyna V., 4,215,188, Cl. 429-194.000.
Spethmann, Donald H., 4,214,626, Cl. 165-29.000.
Honeywell Information Systems Inc.: *See*—
Gee, Arthur; Largo, Edward J.; and Plesinger, Boris M., 4,214,706, Cl. 239-553.300.
Hoogovens IJmuiden, B.V.: *See*—
Beentjes, Nicolaas H. M., 4,214,735, Cl. 266-99.000.
Hooker Chemicals & Plastics Corp.: *See*—
Marciniak, Harry W.; Carlson, Richard D.; and Dever, James L., 4,215,034, Cl. 260-45.80A.
Hope, Henry F.; and Hope, Stephen F. Dryer rack using staggered rollers. 4,214,379, Cl. 34-159.000.
Hope, Stephen F.: *See*—
Hope, Henry F.; and Hope, Stephen F., 4,214,379, Cl. 34-159.000.
Hopen, Leonard F., to RCA Corporation. Method for spot-knocking the electron-gun mount assembly of a CRT. 4,214,798, Cl. 316-26.000.
Hopper, Thomas P., to Sunworks, Inc. Solar energy collector. 4,214,575, Cl. 126-450.000.
Horn and Gladden Lint Cleaner Co., Inc.: *See*—
Schwartz, Robert C.; and Sparks, John E., 4,214,348, Cl. 19-203.000.
Horowitz, Peter, to Intex Inc. Merchandise tagging technique. 4,215,342, Cl. 340-572.000.
Horr, Arthur N.; and Landsness, Clifford A., to B. F. Goodrich Company, The. Tire drum support. 4,214,941, Cl. 156-414.000.
Horsfield, Sydney G.: *See*—
Palmer, David A.; Kuhlmann, George E.; Horsfield, Sydney G.; and Schroeder, Hobe, 4,215,055, Cl. 260-346.700.
Schroeder, Hobe; Kuhlmann, George E.; Horsfield, Sydney G.; and Palmer, David A., 4,215,054, Cl. 260-346.700.
Horwell, David C.; and Timms, Graham H., to Lilly Industries Limited. Process for preparing cis-bicyclooctylamines. 4,215,074, Cl. 260-563.00P.
Hosaka, Akio, to Nissan Motor Company, Limited. Exhaust gas temperature detection by injection of time-varying current. 4,214,563, Cl. 123-437.000.
Hosaka, Akio: *See*—
Nishioka, Tetsuji; Asano, Masaharu; Anzai, Makoto; and Hosaka, Akio, 4,214,558, Cl. 123-489.000.
Houdek, Merle E.: *See*—
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Hovey, Richard J.; Chu, Nori Y. C.; Piusz, Peter G.; and Fuchsman, Charles H., to American Optical Corporation. Photochromic compounds. 4,215,010, Cl. 252-300.000.
Howard, Robert W.: *See*—
Clark, Kenneth L.; Leach, George S.; and Howard, Robert W., 4,214,917, Cl. 148-1.500.
Howarth, Thomas T., to Beecham Group Limited. Clavulanic acid derivatives their preparation and use. 4,215,128, Cl. 424-272.000.
Howden, Ashley G.: *See*—
Jones, Lawrence T.; Sims, Anson; and Howden, Ashley G., 4,214,674, Cl. 222-79.000.
Hoy, Mansell I. Orthosis for exercising joint. 4,214,577, Cl. 128-25.00R.
Hoyler, Gerhard: *See*—
Behn, Reinhard; Hoyler, Gerhard; and Voelkl, Walter, 4,215,385, Cl. 361-273.000.
Huang, Jen-Yen, to National Semiconductor Corporation. Resistor termination. 4,215,333, Cl. 338-322.000.
Hubbard, Dolph E., to Pacer Technology and Resources. Bonded joints and method and material for forming same. 4,215,173, Cl. 428-331.000.
Hudd, Anthony W., to IMI Refiners Limited. Continuous casting of metals. 4,214,625, Cl. 164-420.000.
Huelsman, Kenneth A., to Hughes Aircraft Company. Pseudogaussian video output processing for digital display. 4,215,414, Cl. 364-515.000.
Hughes Aircraft Company: *See*—
Abrams, Richard L.; and Henderson, David M., 4,215,324, Cl. 332-7.510.
Chang, Yu-Wen; and Paul, Jeffrey A., 4,215,313, Cl. 455-326.000.
Huelsman, Kenneth A., 4,215,414, Cl. 364-515.000.
Wittmann, Alois; and McGrath, Ronald J., 4,214,406, Cl. 52-1.000.
Hughes, William B.: *See*—
Reusser, Robert E.; and Hughes, William B., 4,215,017, Cl. 252-458.000.
Hugo Kern und Liebers & Co.: *See*—
Lassche, Jakob, 4,214,466, Cl. 72-142.000.
Huie, Nicholas C.: *See*—
Palmer, David A.; Kuhlmann, George E.; Naim, Houssam M.; Huie, Nicholas C.; and Schroeder, Hobe, 4,215,053, Cl. 260-346.700.
Schroeder, Hobe; Palmer, David A.; Kuhlmann, George E.; Naim, Houssam M.; and Huie, Nicholas C., 4,215,052, Cl. 260-346.700.
Hunt, Letcher B., Jr. Carton for beverage cans. 4,214,660, Cl. 206-427.000.
Hunter, James B.; and McGuire, George, to Matthey Bishop, Inc. Method and apparatus for catalytic heat exchange. 4,214,867, Cl. 432-29.000.
Huppertz, Josef: *See*—
Krings, Peter; Huppertz, Josef; Latka, Herbert; Sperling, Gerhard; Schwuger, Milan J.; and Smolka, Heinz, 4,215,007, Cl. 252-174.250.
Hurst, Michael J., to Hi-Draw Machinery Ltd. Method and apparatus for cooling drawn wire. 4,214,470, Cl. 72-286.000.
Husken, Dieter; Steudle, Ernst; and Zimmerman, Ulrich, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Apparatus for measuring the pressure in a very small volume. 4,214,487, Cl. 73-753.000.
Iijima, Yukihiko, to Nippon Electric Company, Ltd. Digital transmission system for television video signals. 4,215,369, Cl. 358-146.000.
Iinuma, Kazumoto: *See*—
Usubuchi, Touru; and Iinuma, Kazumoto, 4,215,375, Cl. 358-261.000.
Iizuka, Yoshitoku: *See*—
Hatanaka, Toru; and Iizuka, Yoshitoku, 4,214,559, Cl. 123-293.000.
Ikeda, Yasunori: *See*—
Sakamoto, Tamaki; and Ikeda, Yasunori, 4,214,589, Cl. 128-680.000.
Imbruce, Richard; and Leatherman, Nelson E., to Mallinckrodt, Inc. Esophageal pressure monitoring device. 4,214,593, Cl. 128-748.000.
IMI Refiners Limited: *See*—
Hudd, Anthony W., 4,214,625, Cl. 164-420.000.
Imperial Chemical Industries Limited: *See*—
Joy, David R., 4,214,998, Cl. 252-8.800.
Pinto, Alwyn; and Ward, Stanley A., 4,215,099, Cl. 423-360.000.
Imura, Toshinori: *See*—
Tominaga, Shinji; Imura, Toshinori; Yamada, Seiji; and Kogure, Yasuzi, 4,214,827, Cl. 354-127.000.
Inao, Jun-ichi; Yamada, Koichi; Harato, Takuo; and Kato, Hisakatsu, to Sumitomo Aluminum Smelting Company, Ltd. Method for the removal of organic substances from alkali metal aluminate solution. 4,215,094, Cl. 423-123.000.
Independent Broadcasting Authority: *See*—
Schaffer, Jeffrey; and Moore, John E., 4,215,367, Cl. 358-139.000.
Indian Head Inc.: *See*—
Neff, Steve W.; and Pate, Harold T., 4,214,668, Cl. 220-3.300.
Industrie Pirelli, S.p.A.: *See*—
Mezzanotte, Mario, 4,214,620, Cl. 152-354.00R.
Inoko, Michio; Kawatsuji, Shinichi; Matsui, Toshiie; and Yoshida, Shuu, to Asahi Kasei Kogyo Kabushiki Kaisha. Apparatus for producing a photo-polymer plate having relief image areas thereon. 4,214,942, Cl. 156-500.000.
Inoue, Fumio; and Suzuki, Nobuyuki, to Hitachi, Ltd. Deflection circuit for a picture tube. 4,215,295, Cl. 315-408.000.
Inoue, Kazuhiro; and Matsui, Fumio, to Nippon Oil and Fats Co., Ltd. Granular propellant. 4,214,927, Cl. 149-2.000.
Inoue, Shigeo; Kimura, Yoshiharu; and Kinta, Manzo, to Kao Soap Co., Ltd. Process for producing a glycolipid ester. 4,215,213, Cl. 536-115.000.
Institut Merieux: *See*—
Jacquet, Pierre; and Roumiantzeff, Micha, 4,214,592, Cl. 128-743.000.
Institute of Gas Technology: *See*—
Ang, Peter G. P.; and Sammells, Anthony F., 4,215,182, Cl. 429-15.000.
Interlego, A.G.: *See*—
Knudsen, Jens N., 4,214,403, Cl. 46-25.000.
Interliz Anstalt: *See*—
Kunkel, Wolfgang, 4,214,627, Cl. 165-179.000.
International Business Machines Corporation: *See*—
Dalal, Hormazdyar M.; Ghafghaichi, Majid; Kasprzak, Lucian A.; and Wimpfheimer, Hans, 4,215,156, Cl. 427-84.000.
Forget, Lawrence E.; Gdula, Robert A.; and Hollis, Joseph C., 4,214,946, Cl. 156-643.000.
Gfeller, Fritz; and Wild, Daniel, 4,214,807, Cl. 350-3.730.
McCray, William R.; and Rutkowski, Edward V., Jr., 4,215,422, Cl. 364-900.000.
Mitchell, Glen R.; and Houdek, Merle E., 4,215,402, Cl. 364-200.000.
International Flavors & Fragrances Inc.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Vock, Manfred H.; Luccarelli, Domenick, Jr.; Schmitt, Frederick L.; Stork, Gilbert; Macdonald, Timothy; and Liberman, Arthur L., 4,215,006, Cl. 252-174.110.
International Harvester Company: *See*—
Bettin, Leonard A., 4,214,446, Cl. 60-420.000.
International Medical Corporation: *See*—
Patnoi, Charles M.; Cooper, Daniel; and Zellers, Robert D., 4,214,590, Cl. 128-710.000.
International Paper Company: *See*—
Cooper, Keith A., 4,214,695, Cl. 229-36.000.
International Telephone and Telegraph Corporation: *See*—
Gassowski, Jerzy R., 4,214,838, Cl. 400-220.100.
Reh, Oswald R., 4,214,809, Cl. 350-96.200.
Shannon, Larry S., Jr., 4,215,248, Cl. 179-99.00A.
Interox: *See*—
Brichard, Jean; and Colery, Jean-Claude, 4,215,097, Cl. 423-279.000.
Intex Inc.: *See*—
Horowitz, Peter, 4,215,342, Cl. 340-572.000.

Inui, Kenichi; Kobayashi, Hisao; and Aoike, Nanjou, to Toshiba Electric Equipment Corporation. Apparatus for operating a gaseous discharge lamp. 4,215,292, Cl. 315-98.000.
Ireland, Robert W.: *See—*
Bowerman, Harold H., Jr.; and Ireland, Robert W., 4,214,619, Cl. 152-347.000.
Ishida, Kazuyoshi: *See—*
Kai, Fumindo; Kumazawa, Eitaro; Ishioka, Yozo; and Ishida, Kazuyoshi, 4,215,153, Cl. 426-643.000.
Ishiguro, Michihiro: *See—*
Ohnishi, Takashi; Fujita, Yoshiji; Ishiguro, Michihiro; and Nishida, Takashi, 4,215,230, Cl. 568-341.000.
Ishihara, Takao: *See—*
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Ishii, Hideo: *See—*
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Ishii, Shigeru: *See—*
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Ishikawa, Masakazu: *See—*
Fujimori, Fumio; Yokoi, Masatada; Ishikawa, Masakazu; Uemura, Hiroshi; and Shirai, Akira, 4,214,649, Cl. 188-73.500.
Kobayashi, Toyoaki; and Ishikawa, Masakazu, 4,214,648, Cl. 188-73.300.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Sato, Shojiro, 4,214,850, Cl. 415-49.000.
Ishikura, Shinichi: *See—*
Mizuguchi, Ryuzo; Takahashi, Atushi; Ishikura, Shinichi; and Uenaka, Akimitsu, 4,215,028, Cl. 260-29.6TA.
Ishioka, Yozo: *See—*
Kai, Fumindo; Kumazawa, Eitaro; Ishioka, Yozo; and Ishida, Kazuyoshi, 4,215,153, Cl. 426-643.000.
Ito, Eiji; and Okaguchi, Shigeki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Drive unit for a distributor and a fuel pump. 4,214,568, Cl. 123-198.00R.
Ito, Takashi: *See—*
Doi, Toshitada; and Ito, Takashi, 4,215,335, Cl. 371-69.000.
Ito, Thomas I.: *See—*
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Kaufman, Jacquelyn; Ito, Thomas I.; and Nakahara, James H., 4,215,072, Cl. 260-551.00P.
ITOH Iron & Steel Works Co. Ltd.: *See—*
Tabuchi, Seigo, 4,214,868, Cl. 432-124.000.
Itoh, Kunio: *See—*
Yonemura, Utami; Chiba, Kiyoshi; Itoh, Kunio; Mitani, Yuji; and Sobajima, Shigenobu, 4,215,168, Cl. 428-215.000.
ITT Industries, Inc.: *See—*
Belart, Juan, 4,214,448, Cl. 60-547.00R.
Kohler, Alfred; and Prohaska, Hans, 4,214,344, Cl. 15-250.320.
ITW Fastex Italia S.p.A.: *See—*
Aimar, Michele, 4,214,505, Cl. 85-55.000.
Ivanchev, Sergei S.; Enikolopov, Nikolai S.; Polozov, Boris V.; Syrov, Anatoly A.; Primachenko, Oleg N.; and Polyakov, Zorislav N. Method for producing mineral fillers containing graft hydroperoxide groups for use with polymers. 4,214,914, Cl. 106-308.00Q.
Ivanov, Ivan V.: *See—*
Chabanov, Alim I.; Daniljuk, Valery V.; Valeev, Dzhavit K.; Bauer, Alfrid G.; Petrov, Boris N.; Tropin, Sergei N.; Chuguev, Dmitry I.; Ivanov, Ivan V.; Braun, Georgy A.; and Alexandrov, Valery M., 4,214,464, Cl. 72-8.000.
Iwanami, Eiichi, to Kabushiki Kaisha Daini Seikosha. High frequency oscillating circuit using AT cut quartz crystal vibrator. 4,215,322, Cl. 331-116.0FE.
Iwanami, Yoshiyuki; Fukumoto, Masaru; and Funazaki, Mitsunori, to Japan Steel Works, Ltd., The. Process for preventing the rephosphorization of electric steel. 4,214,898, Cl. 75-12.000.
Iwatsu Electric Co., Ltd.: *See—*
Kato, Takefumi; and Takita, Hajime, 4,215,288, Cl. 313-394.000.
Izumi, Masato: *See—*
Nakanishi, Hajime; Ozaki, Kiyoji; Shinozuka, Toshio; Izumi, Masato; Aiba, Takaaki; Kaji, Hisatsugu; Sumida, Yutaka; and Ishihara, Takao, 4,214,979, Cl. 208-128.000.
J. B. Foote Foundry Co., The: *See—*
Hauser, Hans, 4,214,641, Cl. 180-19.00R.
J. H. Beales Steel Fabricators, Ltd.: *See—*
Beales, John H., 4,214,840, Cl. 403-31.000.
J. M. Voith GmbH: *See—*
Pfalzer, Lothar, 4,214,982, Cl. 209-164.000.
Schiel, Christian; and Flamig, Hans, 4,214,949, Cl. 162-352.000.
J. W. Speaker Corporation: *See—*
Brandt, Ivan L., 4,215,390, Cl. 362-311.000.
Jackson, Charles: *See—*
Hamilton, Brian K.; Garner, Eugene F.; and Jackson, Charles, 4,214,438, Cl. 60-205.000.
Jackson, Gary L.; and Rao, Prabhakar B., to Koehring Company. Soil stabilizer and tooth holder therefor. 4,214,633, Cl. 172-123.000.
Jacobs Manufacturing Company, The: *See—*
Quenneville, Raymond N., 4,214,652, Cl. 192-58.00R.
Jacobson, Loren A.: *See—*
Kitchen, Donald R.; and Jacobson, Loren A., 4,214,904, Cl. 75-165.000.
Jacquemet, Georges. Electromagnetic percussion appliance. 4,215,297, Cl. 318-130.000.
Jacquet, Pierre; and Roumiantzeff, Micha, to Institut Merieux. Patch for skin tests. 4,214,592, Cl. 128-743.000.
Jadouin, Michel A. Pulverizer. 4,214,716, Cl. 241-186.00R.
Jaeger, Ben E. Battery plate separator and battery containing the same. 4,215,186, Cl. 429-139.000.
Jaenson, Howard W., to Witteman Steel Mills. Method for continuous casting of metal. 4,214,623, Cl. 164-83.000.
Jaeschke, Harold R.; and Boyle, Daniel J., to Champion International Corporation. Emergency medication package. 4,214,659, Cl. 206-365.000.
Jaffe, Wolfgang: *See—*
Herr, John A.; and Jaffe, Wolfgang, 4,214,539, Cl. 112-158.00E.
Jahnke, Merlin R.: *See—*
Nelson, Alfred D.; and Jahnke, Merlin R., 4,215,258, Cl. 219-10.55D.
James, Varnell L.; and Evelyn, George B., to Boeing Company, The. Flow control system for concentric annular fluid streams. 4,214,610, Cl. 137-597.000.
Janeway, William F. Remote control of electrical power distribution system and method. 4,215,276, Cl. 307-40.000.
Japan Steel Works, Ltd., The: *See—*
Iwanami, Yoshiyuki; Fukumoto, Masaru; and Funazaki, Mitsunori, 4,214,898, Cl. 75-12.000.
Jarrell, Edward C.; Marlow, Donald R.; Tetens, Howard B.; and Gulick, Joseph F., to United States of America, Navy. Target seeker simulator. 4,215,347, Cl. 343-117.00R.
Jatymowicz, Hanna: *See—*
Siejko, Janina; and Jatymowicz, Hanna, 4,214,911, Cl. 106-87.000.
Jeschke, Willi, to Heidelberger Druckmaschinen Aktiengesellschaft. Drive for sheet-fed rotary printing presses with at least two tandem-mounted printing units. 4,214,526, Cl. 101-183.000.
Jewett, Charles S.: *See—*
Wade, James; and Jewett, Charles S., 4,214,457, Cl. 64-4.000.
Jochum, Friedrich; and Glaser, Heinz, to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft. Convertible amphibious vehicle. 4,214,546, Cl. 114-270.000.
Joh, Yasushi, to Nippon Zeon Co. Ltd. Hollow-fiber permeability apparatus. 4,214,990, Cl. 210-194.000.
John Fluke Mfg. Co., Inc.: *See—*
Lambert, Dennis L.; and Lantz, Paul R., 4,215,315, Cl. 328-140.000.
Johns-Manville Corporation: *See—*
Davis, Wayne E., 4,215,382, Cl. 361-166.000.
Johnson, Allan L., Jr., to Control Data Corporation. Fast synchronization circuit for phase locked looped decoder. 4,215,430, Cl. 375-111.000.
Johnson, Donald R.: *See—*
Forsythe, Jesse G., Jr.; Johnson, Donald R.; and St. Onge, Linda M., 4,214,993, Cl. 210-282.000.
Johnson & Johnson: *See—*
Gianakakos, Spiros; and Boardman, Franklin, 4,214,578, Cl. 128-90.000.
Lindemann, Martin K. O.; Mayhew, Raymond L.; O'Lenick, Anthony J., Jr.; and Verdicchio, Robert J., 4,215,064, Cl. 260-403.000.
Jonas, Walter K., to Minnesota Mining and Manufacturing Company. Sheet dispensing device for use with copying machines, and a container for the stack of sheets. 4,214,662, Cl. 206-555.000.
Jones, F. David: *See—*
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; Jones, F. David; Edblad, Warren A.; and Wallace, Frank E., 4,215,406, Cl. 364-468.000.
Gomola, John W.; Wood, William G.; Jones, F. David; Wallace, Frank E.; and Marano, Ross T., 4,215,407, Cl. 364-468.000.
Jones, James P. E.: *See—*
Watson, James H. P.; and Jones, James P. E., 4,214,986, Cl. 210-42.00S.
Jones, Lawrence T.; Sims, Anson; and Howden, Ashley G., to California R & D Center. Hydro pistol with pressurized water container and with variable water ejection capability. 4,214,674, Cl. 222-79.000.
Josefsson, Hans E., to Tour & Andersson Aktiebolag. Arrangement for control of the temperature of heat radiators in a co-tube system. 4,214,698, Cl. 236-42.000.
Joseph, A. David, to Sealed Power Corporation. Pipe joint and method of assembly. 4,214,781, Cl. 285-222.000.
Jouffroy, Guy: *See—*
Durand, Pierre; Charlon, Pierre; and Jouffroy, Guy, 4,215,207, Cl. 526-64.000.
Jourdan-Laforte, Eric, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Brevets Georges Claude. Process of epoxidation of oils. 4,215,058, Cl. 260-348.270.
Joy, David R., to Imperial Chemical Industries Limited. Quaternary ammonium compounds useful as fabric softening agents. 4,214,998, Cl. 252-8.800.
Joy Insignia, Inc.: *See—*
Blumhof, Roy, 4,214,463, Cl. 70-456.00R.
K-2 Corporation: *See—*
Pletz, Murray J., 4,214,685, Cl. 224-211.000.
Kabelwerke, Brugg A.G.: *See—*
Benoit, Pierre A.; and Widmer, Gilbert, 4,214,811, Cl. 350-96.210.
Kabushiki Kaisha Daini Seikosha: *See—*
Iwanami, Eiichi, 4,215,322, Cl. 331-116.0FE.
Kabushiki Kaisha Meiki Seisakusho: *See—*
Omori, Kazumitsu, 4,214,858, Cl. 425-145.000.
Kabushiki Kaisha Sato Kenkyusho: *See—*
Sato, Yo, 4,214,529, Cl. 101-291.000.

Kaebitzsch, Johannes W., to McGraw-Edison Company. Food warmer with a heating element assembly mount. 4,215,267, Cl. 219-439.000.
Kahl, William G., Jr.: *See*—
Mudge, Philip H.; Settanni, Richard; and Kahl, William G., Jr., 4,215,271, Cl. 250-216.000.
Kahng, Dawon, to Bell Telephone Laboratories, Incorporated. MOS Devices having buried terminal zones under local oxide regions. 4,214,359, Cl. 29-571.000.
Kai, Fumindo; Kumazawa, Eitaro; Ishioka, Yozo; and Ishida, Kazuyoshi, to Snow Brand Milk Products Co., Ltd. Method for the production of fish meat powder retaining functional characteristics of fresh fish meat. 4,215,153, Cl. 426-643.000.
Kaieda, Shozo; Mutoh, Masayuk; and Kamimura, Kuniaki, to Minolta Camera Kabushiki Kaisha. Ink jet recording apparatus with trial run at side. 4,215,353, Cl. 346-140.00R.
Kaiser Aluminum & Chemical Corporation: *See*—
Foye, John J.; and Harris, Jerry F., 4,214,624, Cl. 164-89.000.
Sankaran, Subbiah, 4,214,467, Cl. 72-183.000.
Kaji, Hisatsugu: *See*—
Nakanishi, Hajime; Ozaki, Kiyoji; Shinozuka, Toshio; Izumi, Masato; Aiba, Takaaki; Kaji, Hisatsugu; Sumida, Yutaka; and Ishihara, Takao, 4,214,979, Cl. 208-128.000.
Kakuminato, Tetsuo, to Shoketsu Kinzoku Kogyo Kabushiki Kaisha. Piston braking device for hydraulic or pneumatic cylinders. 4,214,795, Cl. 303-89.000.
Kalbfuss, Richard: *See*—
Romeyke, Norbert; and Kalbfuss, Richard, 4,214,436, Cl. 60-39.09R.
Kalck, Philippe; Poilblanc, Rene; and Gaset, Antoine, to Produits Chimiques Ugine Kuhlmann. Binuclear rhodium complex as a hydroformylation and hydrogenation catalyst. 4,215,066, Cl. 260-429.00R.
Kalina, Robert F., to Western Electric Company, Inc. Method of assembling heated terminals and rolled film capacitors within plastic boxes. 4,214,353, Cl. 29-25.420.
Kalinichenko, Anatoly Y. Apparatus for numerical control of thyristor inverter. 4,215,393, Cl. 363-124.000.
Kalir, Rami: *See*—
Patchornik, Avraham; Warshawsky, Abraham; Fridkin, Matityahu; and Kalir, Rami, 4,215,219, Cl. 546-179.000.
Kamber, Peter W.: *See*—
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Kamensky, Veniamin V.: *See*—
Sudnishnikov, Boris V.; Tkach, Khaim B.; Kostylev, Alexandr D.; Kamensky, Veniamin V.; Tupitsyn, Konstantin K.; and Terin, Vladimir M., 4,214,638, Cl. 173-1.000.
Kameya, Kazuo, to Toko Inc. Power conversion device. 4,215,391, Cl. 363-25.000.
Kamimura, Kuniaki: *See*—
Kaieda, Shozo; Mutoh, Masayuk; and Kamimura, Kuniaki, 4,215,353, Cl. 346-140.00R.
Kamiya, Takashi; Maeno, Shizuo; and Kitaura, Yoshihiko, to Fujisawa Pharmaceutical Co., Ltd. Bicyclomycin derivatives. 4,215,043, Cl. 260-239.30B.
Kamota, Hiroyoshi, to Kormori Printing Machinery Co., Ltd. Mounting arrangement for a plate cylinder and form rollers. 4,214,527, Cl. 101-247.000.
Kampe, Wolfgang: *See*—
Ross, Carl H.; Friebe, Walter-Gunar; Kampe, Wolfgang; Bartsch, Wolfgang; and Roesch, Egon, 4,215,134, Cl. 424-273.00B.
Kamphorst, Hendrik A. Liquid seal system, e.g. for a flare stack. 4,214,880, Cl. 55-204.000.
Kamyr Valves, Inc.: *See*—
Kindersley, Peter G., 4,214,732, Cl. 251-315.000.
Kanemasa, Akira; and Sakaguchi, Hisashi, to Nippon Electric Company, Ltd. Recursive digital filter comprising a circuit responsive to first sum and feedback sign bits and second sum sign and integer bits for detecting overflow in the second sum. 4,215,415, Cl. 364-724.000.
Kaneno, Masayuki: *See*—
Oda, Isao; Kaneno, Masayuki; and Yamamoto, Noboru, 4,214,666, Cl. 220-2.10R.
Kanke, Tsutomu: *See*—
Ogawa, Shinsaku; and Kanke, Tsutomu, 4,214,957, Cl. 204-98.000.
Kao Soap Co., Ltd.: *See*—
Deguchi, Katsuhiko; Mino, Junryo; and Tsujii, Kaoru, 4,214,908, Cl. 106-13.000.
Inoue, Shigeo; Kimura, Yoshiharu; and Kinta, Manzo, 4,215,213, Cl. 536-115.000.
Kaplan, Julius F.; Edelberg, Norman L.; and Davis, Chester A., to Helene Curtis Industries, Inc. Permanent wave system using ammonium bisulfite prewrap. 4,214,596, Cl. 132-7.000.
Kara, Jan: *See*—
Pavek, Miloslav; Novacek, Miroslav; Fantl, Jiri; Kara, Jan; and Kasparek, Zdenek, 4,214,352, Cl. 28-254.000.
Karaki, Yasuhumi: *See*—
Arita, Koji; Chiji, Masahiro; Asami, Takayoshi; Karaki, Yasuhumi; and Endo, Toshihiko, 4,214,925, Cl. 148-127.000.
Karrip, Alexander A.; Knoblauch, Jack R.; Pergler, Charles C.; and Korell, Donald D., to Steelcase, Inc. Chair control. 4,214,726, Cl. 248-575.000.
Kasahara, Noboru: *See*—
Sato, Mitsuhiro; and Kasahara, Noboru, 4,214,952, Cl. 204-14.00R.
Kasparek, Zdenek: *See*—
Pavek, Miloslav; Novacek, Miroslav; Fantl, Jiri; Kara, Jan; and Kasparek, Zdenek, 4,214,352, Cl. 28-254.000.
Kasprzak, Lucian A.: *See*—
Dalal, Hormazdyar M.; Ghafghaichi, Majid; Kasprzak, Lucian A.; and Wimpfheimer, Hans, 4,215,156, Cl. 427-84.000.
Kassakian, John G., to Massachusetts Institute of Technology. Parity simulator. 4,215,420, Cl. 364-802.000.
Kastilahn, William W., to Alco Standard Corporation. Heating assembly with vibration dampening shipping supports for graphite heating elements. 4,215,233, Cl. 13-25.000.
Kastner, Hermann L.: *See*—
Rall, Gerhard; and Kastner, Hermann L., 4,214,766, Cl. 279-46.00R.
Kato, Hisakatsu: *See*—
Inao, Jun-ichi; Yamada, Koichi; Harato, Takuo; and Kato, Hisakatsu, 4,215,094, Cl. 423-123.000.
Kato, Mari, to Mitsubishi Denki Kabushiki Kaisha. Junction field effect transistor. 4,215,356, Cl. 357-22.000.
Kato, Shinichi: *See*—
Otani, Syuichi; and Kato, Shinichi, 4,214,802, Cl. 339-60.00M.
Kato, Shinichiro, to Sony Corporation. Tape cassette. 4,214,719, Cl. 242-198.000.
Kato, Takefumi; and Takita, Hajime, to Iwatsu Electric Co., Ltd. Storage target for scan converter tubes. 4,215,288, Cl. 313-394.000.
Katoh, Kazunobu: *See*—
Okita, Tsutomu; Satou, Masami; Hibino, Noburo; Katoh, Kazunobu; and Sawaguchi, Hiroshi, 4,215,030, Cl. 260-40.00R.
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Takenaka, Susumu; Ishii, Hideo; and Katooka, Masao, 4,214,356, Cl. 29-160.600.
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Katz, Harold W.: *See*—
Edwin, Allan I.; and Katz, Harold W., 4,215,299, Cl. 318-574.000.
Katz, Sol; Bertsch, Josef; and Yurgevich, Howard J., to Strick Corporation. Trailer container rear header. 4,214,789, Cl. 296-183.000.
Kaufman, Jacquelyn: *See*—
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Kaufman, Jacquelyn; Ito, Thomas I.; and Nakahara, James H., 4,215,072, Cl. 260-551.00P.
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Kawai Musical Instrument Mfg. Co., Ltd.: *See*—
Deutsch, Ralph, 4,214,503, Cl. 84-1.270.
Kawakita, Katsuhiko: *See*—
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Kawanabe, Yoshihiro, to Pioneer Electronic Corporation. Push-pull amplifier. 4,215,318, Cl. 330-268.000.
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Voronkov, Mikhail G.; Platonova, Ada T.; Annenkova, Vladislava Z.; Kononchuk, Galina M.; Kazimirovskaya, Valentina B.; Ugrjumova, Galina S.; and Annenkova, Valentina M., 4,215,106, Cl. 424-81.000.
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Geurtsen, Friedrich H. H.; and Kebbel, Waldeman, 4,214,937, Cl. 156-361.000.
Kelly, Robert C., to Upjohn Company, The. Enlarged-hetero-ring prostacyclin analogs with 5-halo feature. 4,215,214, Cl. 542-426.000.
Kelly, Thomas E., Sr. Protective apparel. 4,214,317, Cl. 2-2.000.
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Phlipot, Georges A.; Haeck, Jacques R. G.; and Kempen, Simone J., 4,215,041, Cl. 260-141.000.
Kemper, James M.; and Mercer, William I., to Monogram Industries, Inc. Human waste storage and disposal systems for railroads or the like. 4,214,324, Cl. 4-300.000.
Kendall Company, The: *See*—
Patel, Harish A., 4,214,582, Cl. 128-156.000.
Kennametal Inc.: *See*—
McKenry, Robert J., 4,214,617, Cl. 144-2.00N.
Kennedy, James V.; and Dight, Lawrence B., to Engelhard Minerals & Chemicals Corporation. Catalytic cracking. 4,214,978, Cl. 208-120.000.
Kennedy, Joseph P.: *See*—
Buckley, Donald J.; Thaler, Warren A.; and Kennedy, Joseph P., 4,215,022, Cl. 260-5.000.
Kent, Leslie W. Fishing worm lure. 4,214,397, Cl. 43-42.280.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Filss, Peter, 4,214,881, Cl. 55-228.000.
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Petersen, Otto; and Kersten, Franz, 4,215,091, Cl. 422-75.000.
Kessels, Gerard. Process for the preparation of D(-)αphenylglycine. 4,215,223, Cl. 562-401.000.
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Heppolette, Robert L.; Khan, Hamid I.; and McEwan, Ian H., 4,215,027, Cl. 260-29.4UA.

Kho, Khe-Bing J.; and Stewart, Patrick H., to C L Industries, Inc. Catalyst for increasing the tensile strength and core hardness of a sand mold or core. 4,215,012, Cl. 252-429.00R.
Kim, Young D.: *See*—
Hanesworth, Richard F.; Kim, Young D.; and Tolhurst, Gary A., 4,215,206, Cl. 525-441.000.
Kimblin, Clive W.; Heberlein, Joachim V. R.; Slade, Paul G.; Voshall, Roy E.; and Holmes, Francis A., to Electric Power Research Institute, Inc. Vacuum arc switching device with internal shielding. 4,215,255, Cl. 200-144.00B.
Kimura, Yoshiharu: *See*—
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Kin, Nelson I., to National Machinery Company, The. Apparatus for trimming boltheads or the like. 4,214,333, Cl. 10-20.000.
Kindersley, Peter G., to Kamyr Valves, Inc. Side-split ball valve construction. 4,214,732, Cl. 251-315.000.
Kinta, Manzo: *See*—
Inoue, Shigeo; Kimura, Yoshiharu; and Kinta, Manzo, 4,215,213, Cl. 536-115.000.
Kipp, Frederick M.: *See*—
Gorgens, Joseph E.; Kipp, Frederick M.; and Bissell, Robert D., 4,214,486, Cl. 73-738.000.
Kirk, Donald, Jr., to Digital Communications, Inc. Satellite video multiplexing communications system. 4,215,370, Cl. 358-146.000.
Kishi, Tuneo: *See*—
Sakaguchi, Minoru; Oishi, Kazuaki; Nakano, Seizo; and Kishi, Tuneo, 4,215,256, Cl. 200-148.00D.
Kishino, Takao: *See*—
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Kissel, Charles L.; and Caserio, Frederick F., Jr., to Magna Corporation. Acrolein composition and method of enhancing effective life thereof in an aqueous medium. 4,215,147, Cl. 424-333.000.
Kissel, Charles L.; and Caserio, Frederick F., Jr., to Magna Corporation. Acrolein buffering composition and method of enhancing effective life of acrolein in an aqueous medium. 4,215,148, Cl. 424-333.000.
Kitano, Motoi; Sumita, Isao; and Sakamoto, Yukio, to Matsushita Electric Industrial Co., Ltd. Reverse osmosis membrane. 4,214,994, Cl. 210-490.000.
Kitano, Takafumi: *See*—
Henmi, Zen-ichi; Kotaki, Akira; and Kitano, Takafumi, 4,215,143, Cl. 424-315.000.
Kitaura, Yoshihiko: *See*—
Kamiya, Takashi; Maeno, Shizuo; and Kitaura, Yoshihiko, 4,215,043, Cl. 260-239.30B.
Kitchen, Donald R.; and Jacobson, Loren A., to United States of America, Air Force. Gold-tin-silicon alloy for brazing silicon to metal. 4,214,904, Cl. 75-165.000.
Kittel, Ludwig; and Schwarz, Dieter, to Te Ka de Felten & Guilleaume Fernmeldeanlagen GmbH. Adaptive delta-modulation system. 4,215,311, Cl. 375-5.000.
Klatt, Frederick. Telemetry and power transmission for enclosed fluid systems. 4,215,426, Cl. 367-83.000.
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Klein, Hans: *See*—
Kriegel, Ernst; Radke, Dietrich; Klein, Hans; and Arbeletche, Carlos, 4,215,101, Cl. 423-659.000.
Kleinewefers GmbH: *See*—
Meisen, Klaus, 4,214,462, Cl. 68-205.00R.
Schiffer, Gunter; Meisen, Klaus; Sunnen, Rudolf; and Heidan, Klaus, 4,214,461, Cl. 68-158.000.
Kluge, Ronald P., to Kluge, Ronald P.; and Spirk, Herman F. Disassemblable boat carrier and launcher. 4,214,774, Cl. 280-652.000.
Kluiters, Gerard. Panel assembly. 4,214,390, Cl. 40-447.000.
Kmak, Walter S., to Exxon Research & Engineering Co. Method for removing coronene from heat exchangers. 4,214,976, Cl. 208-48.00R.
KMS Fusion, Inc.: *See*—
Segall, Stephen B., 4,215,274, Cl. 250-361.00R.
Knapp, Furn F., Jr., to United States of America, Energy. ^{123m}Te-Labeled biochemicals and method of preparation. 4,215,045, Cl. 260-397.200.
Knapp, Heinrich; Wilfert, Thomas; Grassle, Alfred; and Fussner, Paul, to Robert Bosch GmbH. Fuel injection apparatus. 4,214,565, Cl. 123-179.00L.
Knoblauch, Jack R.: *See*—
Karrip, Alexander A.; Knoblauch, Jack R.; Pergler, Charles C.; and Korell, Donald D., 4,214,726, Cl. 248-575.000.
Knox, Harry D.; and Summar, James P. Device for immobilizing animals. 4,214,556, Cl. 119-103.000.
Knudsen, Jens N., to Interlego, A.G. Hinge element. 4,214,403, Cl. 46-25.000.
Kobatake, Sadao: *See*—
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Kobayashi, Kazuo: *See*—
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Kobayashi, Shigeo; Yoshihara, Nori; Nanbu, Kiyoji; and Goto, Yukio, to Toyo Boseki Kabushiki Kaisha. Polyester composition. 4,215,032, Cl. 260-40.00R.
Kobayashi, Teruo: *See*—
Tsuganezawa, Kunihiro; Kobayashi, Teruo; Harada, Shigehisa; Nishizawa, Yoichi; and Kusunose, Tomoya, 4,214,893, Cl. 75-0.5AA.
Kobayashi, Tomio; and Miyairi, Hidesuke, to Sony Corporation. Method of electrolytically etching ferrite. 4,214,960, Cl. 204-129.650.
Kobayashi, Toyoaki; and Ishikawa, Masakazu, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Vehicle disc brake. 4,214,648, Cl. 188-73.300.
Kobe Steel, Limited: *See*—
Arita, Koji; Chiji, Masahiro; Asami, Takayoshi; Karaki, Yasuhumi; and Endo, Toshihiko, 4,214,925, Cl. 148-127.000.
Kobinger, Walter: *See*—
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Kobler, Ulrich, to Siemens Aktiengesellschaft. Polarized electromagnetic miniature relay. 4,215,329, Cl. 335-78.000.
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Kockelbergh, Godfried A.: *See*—
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Kogure, Yasuzi: *See*—
Tominaga, Shinji; Imura, Toshinori; Yamada, Seiji; and Kogure, Yasuzi, 4,214,827, Cl. 354-127.000.
Kohler, Alfred; and Prohaska, Hans, to ITT Industries, Inc. Windshield wiper. 4,214,344, Cl. 15-250.320.
Kohn, Gary A.: *See*—
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Kohyama, Susumu; and Kubota, Nobuhisa, to Tokyo Shibaura Electric Co., Ltd. Charge transfer device stored with fixed information. 4,215,357, Cl. 357-24.000.
Kokusan Denki Co., Ltd.: *See*—
Nanjo, Hirotoshi; and Murakami, Katsuo, 4,214,566, Cl. 123-594.000.
Kolesnikov, Vladimir M.: *See*—
Bukhtiyarov, Ivan D.; Potanin, Veniamin G.; Alt, Viktor V.; Rakhmanin, Evgeny A.; Lyzlov, Vladimir M.; An, Viktor B.; Anikin, Valery P.; Koshevoi, Vladimir G.; Timonin, Nikolai G.; Zhdanov, Gennady P.; Gibert, Alfred I.; and Kolesnikov, Vladimir M., 4,215,404, Cl. 364-431.000.
Kollonitsch, Janos; and Marburg, Stephen, to Merck & Co., Inc. Fluorination process. 4,215,221, Cl. 548-344.000.
Kolossow, Klaus-Dieter, to Hermann Berstorff Maschinenbau GmbH. Screw extruder for the continuous extrusion of thermoplastic materials. 4,214,862, Cl. 425-204.000.
Kolpakov, Serafim V.; Gurkov, Zinovy L.; Bondarenko, Oleg L.; Valtsov, Vladimir V.; Pozhivanov, Alexandr M.; Gugnin, Eduard D.; Radilov, Stanislav V.; and Bogdanov, Alexandr A. Apparatus for lining ladles. 4,214,856, Cl. 425-60.000.
Kondo, Hiroyuki, to Aisin Seiki Kabushiki Kaisha. Brake pressure control apparatus for split braking system. 4,214,794, Cl. 303-6.00C.
Konig, Hans-bodo: *See*—
Preiss, Michael; Konig, Hans-bodo; Metzger, Karl G.; and Feyen, Peter, 4,215,118, Cl. 424-248.400.
Konig, Wolfgang, to Hoechst Aktiengesellschaft. Partially protected human insulin-A-chain and process for its manufacture. 4,215,037, Cl. 260-112.50R.
Konishiroku Photo Industry Co., Ltd.: *See*—
Shimokura, Toshiko, 4,214,815, Cl. 350-215.000.
Uchida, Yasuo; Shiozawa, Kazuo; and Suzuki, Kiziro, 4,214,826, Cl. 354-31.000.
Konkol, Werner: *See*—
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Kono, Masao; Tani, Tatsuo; Ogawa, Toshiyuki; and Ariyama, Kenzo, to Ricoh Company, Ltd. Electrostatic copying machine comprising improved document scanning means. 4,214,832, Cl. 355-8.000.
Kono, Tateomi, to Minolta Camera Kabushiki Kaisha. Operation timing control system for mechanical apparatus operable under program control. 4,214,833, Cl. 355-14.00C.
Kononchuk, Galina M.: *See*—
Voronkov, Mikhail G.; Platonova, Ada T.; Annenkova, Vladislava Z.; Kononchuk, Galina M.; Kazimirovskaya, Valentina B.; Ugrjumova, Galina S.; and Annenkova, Valentina M., 4,215,106, Cl. 424-81.000.
Koppe, Herbert: *See*—
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Morgret, Gordon L., 4,214,745, Cl. 271-272.000.
Korell, Donald D.: *See*—
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Kormori Printing Machinery Co., Ltd.: *See*—
Kamota, Hiroyoshi, 4,214,527, Cl. 101-247.000.
Kornylak Corporation: *See*—
Tabler, Charles P., 4,214,864, Cl. 425-329.000.
Koshevoi, Vladimir G.: *See*—
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Koster, Claus; Siegert, Joachim; and Nothdurft, Heinz, to Robert Bosch GmbH. Testing device for injection pumps. 4,214,476, Cl. 73-119.00A.
Kostylev, Alexandr D.: *See*—
Sudnishnikov, Boris V.; Tkach, Khaim B.; Kostylev, Alexandr D.; Kamensky, Veniamin V.; Tupitsyn, Konstantin K.; and Terin, Vladimir M., 4,214,638, Cl. 173-1.000.
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Kouda, Masanori: *See*—
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Kozacka, Frederick J., to Gould Inc. Pressure contact between ferrules and fusible element of electric fuses. 4,215,331, Cl. 335-252.000.
Kozlov, Valentin I.: *See*—
Balandin, Jury F.; Badanin, Vladimir I.; Gorynin, Igor V.; Gluskin, Lev Y.; Zvezdin, Jury I.; Nikolaev, Vladimir A.; Parshin, Anatoly M.; Zorev, Nikolai N.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Markov, Sergei I.; Sobolev, Jury V.; and Kozlov, Valentin I., 4,214,950, Cl. 176-87.000.
Kozlowicz, Stanley R. Molded plastic bee feeder. 4,214,329, Cl. 6-5.000.
Kraemer, Rolf H., to Fansteel Inc. Heavy duty insert. 4,214,846, Cl. 407-114.000.
Kraemer, Rolf H., to Fansteel Inc. Insert for railroad tools. 4,214,847, Cl. 407-114.000.
Kraft, Russell H. Fast release connector. 4,214,806, Cl. 339-242.000.
Kramer, Wolfgang; Buchel, Karl H.; Plempel, Manfred; and Haller, Ingo, to Bayer Aktiengesellschaft. Antimicrobial agents. 4,215,131, Cl. 424-273.00R.
Kraska, Allen R., to Pfizer Inc. Antiviral amine derivatives of glycerol and propanediols. 4,215,146, Cl. 424-330.000.
Kratzer, Reinhold H.: *See*—
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Kraus, Werner. Long-term endoprosthesis. 4,214,322, Cl. 3-1.910.
Krause, Joachim: *See*—
Pohl, Ludwig; Eidenschink, Rudolf; Krause, Joachim; and Weber, Georg, 4,214,819, Cl. 350-334.000.
Kriegel, Ernst; Radke, Dietrich; Klein, Hans; and Arbeletche, Carlos, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Method and apparatus for performing chemical and/or physical treatments. 4,215,101, Cl. 423-659.000.
Krings, Peter; Huppertz, Josef; Latka, Herbert; Sperling, Gerhard; Schwuger, Milan J.; and Smolka, Heinz, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Process for the manufacture of low-phosphorus or phosphorus-free detergents containing aluminosilicates. 4,215,007, Cl. 252-174.250.
Krob, Erwin, to TMC Corporation. Ski brake. 4,214,777, Cl. 280-605.000.
Krogstad, Ivar; Sandoy, Harry S.; and Haavie, Thor O., to A/S Pusnes Mekaniske Verksted. Anchor stowing arrangement. 4,214,545, Cl. 114-294.000.
Kromrey, Robert V., to Atlantic Research Corporation. Coated coal piles. 4,214,875, Cl. 44-6.000.
Kubiatowicz, James F. Disposable structure for use in microwave cooking. 4,214,515, Cl. 99-400.000.
Kubo, Hiroshi: *See*—
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Palmer, David A.; Kuhlmann, George E.; Naim, Houssam M.; Huie, Nicholas C.; and Schroeder, Hobe, 4,215,053, Cl. 260-346.700.
Palmer, David A.; Kuhlmann, George E.; Horsfield, Sydney G.; and Schroeder, Hobe, 4,215,055, Cl. 260-346.700.
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Kuhn, Loughrey R. Fiber optic modem/data set. 4,215,269, Cl. 455-612.000.
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Kulesza, Ralph J.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Target game apparatus. 4,214,749, Cl. 273-1.00R.
Kumazawa, Eitaro: *See*—
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Kummer, Werner: *See*—
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Kunkel, Wolfgang, to Interliz Anstalt. Fire tube for a heating boiler. 4,214,627, Cl. 165-179.000.
Kunnen, Jan; and van der Schee, Abraham C., to Akzo N.V. Process of coating metal surfaces. 4,215,162, Cl. 427-435.000.
Kuo, Han C., to Olin Corporation. Plated metallic cathode with porous copper subplating. 4,214,954, Cl. 204-32.00R.
Kuraray Co., Ltd.: *See*—
Matsumoto, Mitsuo; and Tamura, Masuhiko, 4,215,077, Cl. 568-454.000.
Mawatari, Shizuo; and Nishida, Takashi, 4,214,909, Cl. 106-16.000.
Ohnishi, Takashi; Fujita, Yoshiji; Ishiguro, Michihiro; and Nishida, Takashi, 4,215,230, Cl. 568-341.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Nakanishi, Hajime; Ozaki, Kiyoji; Shinozuka, Toshio; Izumi, Masato; Aiba, Takaaki; Kaji, Hisatsugu; Sumida, Yutaka; and Ishihara, Takao, 4,214,979, Cl. 208-128.000.
Kurzhals, Hans-Albert; and Sylla, Klaus F., to decofa Kaffee-Bearbeitungs-GmbH. Process for the removal of undesirable constituents from raw coffee beans. 4,215,150, Cl. 426-430.000.
Kusaka, Satoshi; and Shino, Kuninori, to Sony Corporation. Tone arm assembly. 4,214,757, Cl. 274-23.00R.
Kusters, John A., to Hewlett-Packard Company. Self calibrating crystal controlled frequency counter method and apparatus. 4,215,308, Cl. 324-78.00D.
Kusunose, Tomoya: *See*—
Tsuganezawa, Kunihiro; Kobayashi, Teruo; Harada, Shigehisa; Nishizawa, Yoichi; and Kusunose, Tomoya, 4,214,893, Cl. 75-0.5AA.
Kwok, John C., to Bexford Limited. Light-sensitive vesicular recording materials and process of using. 4,215,191, Cl. 430-152.000.
Kyle, Allan H. Industrial sweeper. 4,214,338, Cl. 15-83.000.
Laban, Ernst A. Denture construction. 4,214,366, Cl. 433-189.000.
Labbe, Francis A. M.; Rakowicz, Jan A.; and Ahern, Ronald A., to Molins Limited. Cigarette making machines. 4,214,595, Cl. 131-108.000.
Lacchia, Adrien, to Air Industrie. Electrostatic paint spray apparatus having rotary spray head with an air seal. 4,214,708, Cl. 239-703.000.
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L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Brevets Georges Claude: *See*—
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LaLonde, Carl H.: *See*—
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Lambert, Dennis L.; and Lantz, Paul R., to John Fluke Mfg. Co., Inc. Low frequency signal period or ratio (period)-to-voltage converter. 4,215,315, Cl. 328-140.000.
Lambert, Donald L., to Rockwell International Corporation. Digital conferencing apparatus. 4,215,247, Cl. 179-18.0BC.
Lancre, Jean C.: *See*—
Barbier, Daniel; Lancre, Jean C.; Lauwick, Bernard; and Poujois, Robert, 4,215,278, Cl. 307-116.000.
Landis, Delmer H., Jr.: *See*—
Tuley, Eugene N.; Landis, Delmer H., Jr.; and Lozier, Paul W., 4,214,851, Cl. 415-115.000.
Tuley, Eugene N.; Landis, Delmer H., Jr.; and Lozier, Paul W., 4,214,852, Cl. 415-115.000.
Landsness, Clifford A.: *See*—
Horr, Arthur N.; and Landsness, Clifford A., 4,214,941, Cl. 156-414.000.
Landucci, Dennis P., to Minnesota Mining and Manufacturing Company. Fluoroaliphatic radical and carbodiimide containing compositions for fabric treatment. 4,215,205, Cl. 525-331.000.
Langer, Arthur W., Jr., to Exxon Research & Engineering Co. T_nMR'_cocatalysts. 4,215,014, Cl. 252-429.00B.
Langer, Manfred; and Siebels, Johann, to Volkswagenwerk Aktiengesellschaft. Method of producing an article which comprises a first zone of a nonoxide ceramic material and a second zone of a softer material. 4,214,906, Cl. 75-208.00R.
Lantz, Paul R.: *See*—
Lambert, Dennis L.; and Lantz, Paul R., 4,215,315, Cl. 328-140.000.
Lantzsch, Reinhard, to Bayer Aktiengesellschaft. Preparation of halogenovinyl-y-butyrolactones. 4,215,050, Cl. 260-343.600.
Largo, Edward J.: *See*—
Gee, Arthur; Largo, Edward J.; and Plesinger, Boris M., 4,214,706, Cl. 239-553.300.
Larsson, Stig-Goran, to Xerox Corporation. Suppression of cross-coupling in multi-orifice pressure pulse drop-ejector systems. 4,215,354, Cl. 346-140.00R.
Lass, John L., to Square D Company. Screw mounting mechanism for electrical outlet box. 4,214,667, Cl. 220-3.200.

Lassche, Jakob, to Hugo Kern und Liebers & Co. Apparatus for the winding of helical springs. 4,214,466, Cl. 72-142.000.

Lataire, Philippe W. R. M. G.; Magetto, Gaston; and Van Eck, Jean-Louis. Apparatus for controlling the operation of power transistors in a switching mode. 4,215,279, Cl. 307-254.000.

Latham, Eldon A.: *See*—
Sorensen, Norman E.; and Latham, Eldon A., 4,214,703, Cl. 239-127.300.

Latham, Raymond E. Bore seal. 4,214,763, Cl. 277-167.500.

Latka, Herbert: *See*—
Kringa, Peter; Huppertz, Josef; Latka, Herbert; Sperling, Gerhard; Schwuger, Milan J.; and Smolka, Heinz, 4,215,007, Cl. 252-174.250.

Lauterbach, Heinz, to Robert Bosch GmbH. System and method for eliminating errors in airflow measurement apparatus. 4,214,478, Cl. 73-204.000.

Lauwick, Bernard: *See*—
Barbier, Daniel; Lancre, Jean C.; Lauwick, Bernard; and Poujois, Robert, 4,215,278, Cl. 307-116.000.

Lawrance, Richard J., to General Electric Company. Low cost bipolar current collector-separator for electrochemical cells. 4,214,969, Cl. 204-255.000.

Leach, George S.: *See*—
Clark, Kenneth L.; Leach, George S.; and Howard, Robert W., 4,214,917, Cl. 148-1.500.

Leatherman, Nelson E.: *See*—
Imbruce, Richard; and Leatherman, Nelson E., 4,214,593, Cl. 128-748.000.

Le Breton, Edward T.: *See*—
Takacs, Robert J.; Brunkhurst, Winfield S.; and Le Breton, Edward T., 4,214,611, Cl. 138-30.000.

Leddy, James J.: *See*—
Heikel, Henrik R.; and Leddy, James J., 4,214,971, Cl. 204-290.00F.

Lee, Bobby L. Artificial flowers and method for their manufacture, unistem. 4,215,163, Cl. 428-24.000.

Lee, Lawrence L. Dental floss applicator. 4,214,598, Cl. 132-92.00R.

Lee, Sin H. Cytochemical agents and methods for the detection of steroid hormone receptors in human tissues. 4,215,102, Cl. 424-3.000.

Le Garfe, Roger J.; Pignal, Edmond; and Magloire, Charles J., to Compagnie Francaise des Petroles; Societe Nationale Elf Aquitaine (Production); Ateliers et Chantiers de Bretagne—A.C.B.; Etudes Petrolieres Marines; Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines (DORIS); and Compagnie Maritime d'Expertises. Butt-welding apparatus for assembling and laying pipe strings in deep water. 4,214,692, Cl. 228-44.10R.

Lehmann, Rolf, to Escher Wyss Limited. Controlled deflection roll. 4,214,354, Cl. 29-116.0AD.

Leibowitz, Marshall; Willis, Alan; and George, Douglas, to Timex Corporation. Electrochromic display having enhanced night viewability. 4,214,820, Cl. 350-357.000.

Leitner, Kajetan. Torque transmission clutch. 4,214,459, Cl. 64-29.000.

Lejon, Jean, to Controle Bailey. Process for the automatic signalling of faults of a static automatic module and a module for realizing the process. 4,215,340, Cl. 340-507.000.

Lemelson, Jerome H. Cartridge magnetic recorder. 4,215,379, Cl. 360-85.000.

Lemke, Harold C., to American Can Company. Adhesive bonding of assembly parts. 4,214,944, Cl. 156-518.000.

Le Page, Jean-Francois; Martino, Germain; and Miquel, Jean, to Societe Francaise des Produits pour Catalyse. Catalytic hydroreforming process. 4,214,980, Cl. 208-139.000.

Lermann, Peter: *See*—
Stemme, Otto; Lermann, Peter; Wagensonner, Eduard; and Cocron, Istvan, 4,214,824, Cl. 354-23.00D.

Leskinen, Mikko: *See*—
Suovaniemi, Osmo; and Leskinen, Mikko, 4,215,092, Cl. 422-100.000.

Lever Brothers Company: *See*—
Morris, Ronald M.; and Pratley, Stuart K., 4,214,997, Cl. 252-8.800.

Levine, Abraham I. Applicating device. 4,214,681, Cl. 222-214.000.

Levitt, George, to Du Pont de Nemours, E. I., and Company. Herbicidal pyrimidine and triazine sulfonamides. 4,214,890, Cl. 71-90.000.

Levolor Lorentzen, Inc.: *See*—
Debs, Victor, 4,214,622, Cl. 160-168.00A.

Lewers, William R.: *See*—
Bulso, Joseph D., Jr.; and Lewers, William R., 4,214,471, Cl. 72-349.000.

Lewis, John: *See*—
Youngberg, Fred A.; and Zierhut, Clarence D., 4,214,340, Cl. 15-184.000.

Lewis, John G., to Emerson Electric Co. Splash shield for electric motor. 4,215,285, Cl. 310-90.000.

Lewis, Joseph J.; and Webb, Robert L., to SK&F Lab Co. Process for preparing 4-substituted imidazole compounds. 4,215,217, Cl. 544-139.000.

Liberman, Arthur L.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Vock, Manfred H.; Luccarelli, Domenick, Jr.; Schmitt, Frederick L.; Stork, Gilbert; Macdonald, Timothy; and Liberman, Arthur L., 4,215,006, Cl. 252-174.110.

Lieder, Gaylerd M., to Bemis Company, Inc. Bag top forming and retaining apparatus. 4,214,417, Cl. 53-371.000.

Lillie, Christian: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,215,133, Cl. 424-273.00R.

Lilly Industries Limited: *See*—
Horwell, David C.; and Timms, Graham H., 4,215,074, Cl. 260-563.00P.

Lindblad, Sture V., to Stiga AB. Noise damping arrangement in rotating cutting devices. 4,214,426, Cl. 56-295.000.

Lindemann, Martin K. O.; Mayhew, Raymond L.; O'Lenick, Anthony J., Jr.; and Verdicchio, Robert J., to Johnson & Johnson; and Mona Industries, Inc. Phosphobetaines. 4,215,064, Cl. 260-403.000.

Linear International: *See*—
Brimer, Claude M., 4,215,303, Cl. 318-752.000.

Linton Medical Services Limited: *See*—
Millington, Arthur R., 4,215,103, Cl. 424-4.000.

Lipp, Eberhard: *See*—
Lucke, Roland; and Lipp, Eberhard, 4,214,376, Cl. 34-10.000.

List, Karl-Hermann: *See*—
Uhrig, Heinz; List, Karl-Hermann; and Deubel, Reinhold, 4,214,872, Cl. 8-589.000.

Little, Richard L., to Daig Corporation. Temporary pacemaker lead apparatus. 4,214,594, Cl. 128-786.000.

Little, Richard L., to Daig Corporation. Press fit electrical connection apparatus. 4,214,804, Cl. 339-183.000.

Lochridge, Joe C.: *See*—
Boehme, Herman F.; Srivastav, Avadhesh N. L.; and Lochridge, Joe C., 4,214,387, Cl. 37-195.000.

Lockheed Electronics Co., Inc.: *See*—
Bigley William J.; and Rizzo, Vincent J., 4,215,298, Cl. 318-327.000.

Login, Robert B., to BASF Wyandotte Corp. Aqueous dispersion of a branched polyester. 4,215,026, Cl. 260-292.00E.

Long, Charles H., to Stout Industries, Inc. Counterbalance display sign. 4,214,393, Cl. 40-613.000.

Long, John W.: *See*—
Manger, Charles W.; Fickes, Michael G.; and Long, John W., 4,215,193, Cl. 430-291.000.

Loontjens, Jacobus A., to Stamicarbon, B.V. Process for the polymerization of 1-alkenes. 4,215,013, Cl. 252-429.00B.

L'Oreal: *See*—
Bauer, Daniel; and Braque, Gerard, 4,214,677, Cl. 222-145.000.

Losell, Ingvar E., to Gambro AB. Coupling device. 4,214,779, Cl. 285-93.000.

Lotti, Victor J.; and Stone, Clement A., to Merck & Co., Inc. Method of treating hypertension. 4,215,110, Cl. 424-177.000.

Lover, Myron J.; Singer, Arnold J.; and Lynch, Donald M., to Block Drug Company Inc. Propoxylate toxicants. 4,215,116, Cl. 424-217.000.

Lowe, David J., to National Research Development Corporation. Chart recorders. 4,215,351, Cl. 346-136.000.

Lowe, Edward J.; Wilson, Arthur; and Minshall, Michael W., to Albright & Wilson Limited. Purification of wet process phosphoric acid. 4,215,098, Cl. 423-305.000.

Lowe, Norman C.: *See*—
Dillarstone, Alan; Lowe, Norman C.; and Cropper, Edwin, 4,214,915, Cl. 134-19.000.

Lowe, Robert E.: *See*—
Seibold, Robert W.; Parechanian, Haig S.; Weatherill, William T.; and Lowe, Robert E., 4,215,161, Cl. 427-228.000.

Lozier, Paul W.: *See*—
Tuley, Eugene N.; Landis, Delmer H., Jr.; and Lozier, Paul W., 4,214,851, Cl. 415-115.000.
Tuley, Eugene N.; Landis, Delmer H., Jr.; and Lozier, Paul W., 4,214,852, Cl. 415-115.000.

Lucas Industries Limited: *See*—
Mowbray, Dorian F., 4,214,562, Cl. 123-568.000.
Skinner, Robert T. J., 4,214,564, Cl. 123-502.000.

Lucas, Malcolm B.; and Van Coney, H. Robert, to Procter & Gamble Company, The. The Method of making a perforated tubular member. 4,214,945, Cl. 156-634.000.

Luccarelli, Domenick, Jr.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Vock, Manfred H.; Luccarelli, Domenick, Jr.; Schmitt, Frederick L.; Stork, Gilbert; Macdonald, Timothy; and Liberman, Arthur L., 4,215,006, Cl. 252-174.110.

Lucke, Roland; and Lipp, Eberhard, to Gerbruder Lodige Maschinenbau-Gesellschaft mbH. Process and apparatus for the continuous drying and/or granulating of loose material. 4,214,376, Cl. 34-10.000.

Lummus Company, The: *See*—
Davis, Hyman R.; Nasr, Wagih I.; Roethlin, Siegfried M.; and Sherwood, Harold D., 4,214,975, Cl. 208-33.000.

Lutts, William M. Automatic rail greasing apparatus. 4,214,647, Cl. 184-3.00A.

Luxtron Corporation: *See*—
Wickersheim, Kenneth A., 4,215,275, Cl. 250-459.000.

Lynch, Donald M.: *See*—
Lover, Myron J.; Singer, Arnold J.; and Lynch, Donald M., 4,215,116, Cl. 424-217.000.

Lyzlov, Vladimir M.: *See*—
Bukhtiyarov, Ivan D.; Potanin, Veniamin G.; Alt, Viktor V.; Rakhmanin, Evgeny A.; Lyzlov, Vladimir M.; An, Viktor B.; Anikin, Valery P.; Koshevoi, Vladimir G.; Timonin, Nikolai G.; Zhdanov, Gennady P.; Gibert, Alfred I.; and Kolesnikov, Vladimir M., 4,215,404, Cl. 364-431.000.

M. H. Graham Corporation: *See*—
Graham, Elwood M., 4,214,714, Cl. 241-93.000.
Graham, Elwood M., 4,214,715, Cl. 241-93.000.

Mabrouk, Saied A.; Morgan, Edward T.; and Davis, James W. Ink and moisture control with master condition compensation. 4,214,523, Cl. 101-148.000.

Macdonald, Timothy: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Vock, Manfred H.; Luccarelli, Domenick, Jr.; Schmitt, Frederick L.; Stork, Gilbert; Macdonald, Timothy; and Liberman, Arthur L., 4,215,006, Cl. 252-174.110.

MacDoran, Peter F.: *See*—
United States of America, National Aeronautics and Space Administration; and MacDoran, Peter F., 4,215,345, Cl. 343-112.00R.

Mace, Richard W., to Ramseyer, John W., a part interest. Electrical testing apparatus. 4,215,306, Cl. 320-2.000.

MacElvain, Robert C. Magnetic separation. 4,214,984, Cl. 209-214.000.

Mach, Helmut, to U.S. Philips Corporation. Circuit arrangement for the digital correction of time base errors of a television signal using variable addressing of a memory. 4,215,376, Cl. 360-36.000.

Machat, Jean-Yves: *See*—
Chapuis, Maurice; and Machat, Jean-Yves, 4,214,711, Cl. 241-30.000.

Machines Chambon S.A.: *See*—
Corse, Louis G., 4,214,524, Cl. 101-181.000.

Mack, Heinz; and Singer, Gunter, to Mack, Heinz. Dental articulator. 4,214,367, Cl. 433-60.000.

Mack, William: *See*—
Walter, Henry J.; and Mack, William, 4,214,365, Cl. 30-224.000.

MacLeod, Edward N., to General Electric Company. Wet proofed conductive current collector for the electrochemical cells. 4,215,183, Cl. 429-30.000.

Maeno, Shizuo: *See*—
Kamiya, Takashi; Maeno, Shizuo; and Kitaura, Yoshihiko, 4,215,043, Cl. 260-239.30B.

Maes, Robert H.: *See*—
Verhulst, Dirk E. V.; Maes, Robert H.; and Fontainas, Luc M., 4,214,897, Cl. 75-11.000.

Maffet, Vere, to UOP Inc. Mechanical dewatering process. 4,214,377, Cl. 34-12.000.

Magee, Thomas A., to Diamond Shamrock Corporation. Ketoxime carbamates. 4,215,075, Cl. 260-566.0AC.

Magetto, Gaston: *See*—
Lataire, Philippe W. R. M. G.; Magetto, Gaston; and Van Eck, Jean-Louis, 4,215,279, Cl. 307-254.000.

Magloire, Charles J.: *See*—
Le Garfe, Roger J.; Pignal, Edmond; and Magloire, Charles J., 4,214,692, Cl. 228-44.10R.

Magna Corporation: *See*—
Kissel, Charles L.; and Caserio, Frederick F., Jr., 4,215,147, Cl. 424-333.000.
Kissel, Charles L.; and Caserio, Frederick F., Jr., 4,215,148, Cl. 424-333.000.

Mahaffey, Jack L., II: *See*—
Pavicic, Mark J.; and Mahaffey, Jack L., II, 4,215,399, Cl. 364-101.000.

Mahig, Joseph. Phase responsive frequency detector. 4,215,280, Cl. 307-295.000.

Mahl, Gunard O. B., to CHA Industries. Evacuation apparatus with cryogenic pump and trap assembly. 4,214,853, Cl. 417-154.000.

Mahoney, Gerard E., to Bell Telephone Laboratories, Incorporated. Process useful in the fabrication of articles with metallized surfaces. 4,214,966, Cl. 204-192.00E.

Maier, Lawrence C., to Simmonds Precision Products, Inc. Capacitive type fuel probe compensation circuit. 4,214,479, Cl. 73-304.00C.

Mailliet, Pierre; and Ulveling, Leon, to Paul Wurth, S.A. Apparatus for opening and closing a fluid conduit. 4,214,608, Cl. 137-546.000.

Majerski, Stanislaw. Method for binary multiplication of a number by a sum of two numbers and a digital system for implementation thereof. 4,215,419, Cl. 364-760.000.

Majlinger, Thomas J., to Standard Brands Incorporated. Process for improving the palatability of pet food. 4,215,149, Cl. 426-292.000.

Makino, Koichi: *See*—
Hattori, Seizi; Nakagawa, Takehiko; Kobayashi, Kazuo; Makino, Koichi; and Matsuda, Wakatake, 4,215,158, Cl. 427-130.000.

Makino, Shozaburo; and Otobe, Seiji, to Nippon Seren Co. Ltd. False reeling preventing apparatus for traverse thread reeling machines. 4,214,717, Cl. 242-36.000.

Maliczyszyn, Walter: *See*—
Mazzarella, Emil D.; Wood, Leonard J., Jr.; and Maliczyszyn, Walter, 4,214,948, Cl. 162-158.000.

Malley, Arthur, to Research Corporation. Modified grass pollen antigens. 4,215,036, Cl. 260-112.00R.

Mallinckrodt, Inc.: *See*—
Imbruce, Richard; and Leatherman, Nelson E., 4,214,593, Cl. 128-748.000.

Manger, Charles W.; Fickes, Michael G.; and Long, John W., to Du Pont de Nemours, E. I., and Company. Dry toner process with improved toning uniformity for color developing an imaged tacky and nontacky surface. 4,215,193, Cl. 430-291.000.

Mannesmann Aktiengesellschaft: *See*—
Vorbach, Emil, 4,214,468, Cl. 72-189.000.

Manning, James F., to Champion International Corporation. Liquid gable top carton with integral carrying handle. 4,214,697, Cl. 229-52.00B.

Marano, Ross T.: *See*—
Gomola, John W.; Wood, William G.; Jones, F. David; Wallace, Frank E.; and Marano, Ross T., 4,215,407, Cl. 364-468.000.

Marburg, Stephen: *See*—
Kollonitsch, Janos; and Marburg, Stephen, 4,215,221, Cl. 548-344.000.

Marciniak, Harry W.; Carlson, Richard D.; and Dever, James L., to Hooker Chemicals & Plastics Corp. Flame retardant polymeric compositions containing halogenated Diels-Alder adducts with furan. 4,215,034, Cl. 260-45.80A.

Marco, Francis W.; and Kuhn, Hans H., to Milliken Research Corporation. Elastomer modified textile material and method of producing same. 4,215,171, Cl. 428-245.000.

Mares, Frank: *See*—
Diamond, Steven E.; and Mares, Frank, 4,215,218, Cl. 546-162.000.

Maringer, Robert E., to Battelle Development Corporation, The. Method and apparatus for producing flake particles. 4,215,084, Cl. 264-8.000.

Markov, Sergei I.: *See*—
Balandin, Jury F.; Badanin, Vladimir I.; Gorynin, Igor V.; Gluskin, Lev Y.; Zvezdin, Jury I.; Nikolaev, Vladimir A.; Parshin, Anatoly M.; Zorev, Nikolai N.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Markov, Sergei I.; Sobolev, Jury V.; and Kozlov, Valentin I., 4,214,950, Cl. 176-87.000.

Marley, James E.: *See*—
Coldren, Daniel R.; and Marley, James E., 4,214,361, Cl. 29-863.000.

Marlow, Donald R.: *See*—
Jarrell, Edward C.; Marlow, Donald R.; Tetens, Howard B.; and Gulick, Joseph F., 4,215,347, Cl. 343-117.00R.

Marmon Company: *See*—
Holpuch, Robert J.; Mathias, Robert G.; and Young, Alan C., 4,214,502, Cl. 84-1.240.

Marquardt, Klaus-Dieter: *See*—
Woeckener, Willi; Pawelczyk, Werner; and Marquardt, Klaus-Dieter, 4,214,857, Cl. 425-141.000.

Marquette Electronics, Inc.: *See*—
Reiser, Gerald J., 4,215,236, Cl. 174-59.000.

Martelli, Guglielmo. Device for feeding sheets to boxing machines. 4,214,742, Cl. 271-69.000.

Martin, Chloeta F.: *See*—
Martin, Theodore O., Jr., 4,215,178, Cl. 428-421.000.

Martin, Eugene C.; and Adicoff, Arnold, to United States of America, Navy. Room temperature cured elastomer. 4,215,046, Cl. 260-326.260.

Martin, Jean-Marie M. Machine for drying and butt-jointing wood veneer by continuous contact engagement. 4,214,378, Cl. 34-148.000.

Martin, Theodore O., Jr., to Martin, Chloeta F., a part interest. Nonstick rubber liner. 4,215,178, Cl. 428-421.000.

Martin, Walter L., Jr., to PPG Industries, Inc. Air fin coolers for glass fiber forming apparatus. 4,214,884, Cl. 65-12.000.

Martinmaas, Werner W. Quickly adjustable ratchet wrench. 4,214,491, Cl. 81-134.000.

Martino, Germain: *See*—
Le Page, Jean-Francois; Martino, Germain; and Miquel, Jean, 4,214,980, Cl. 208-139.000.

Martins, Joseph G.: *See*—
Donermeyer, Donald D.; and Martins, Joseph G., 4,215,159, Cl. 427-142.000.

Marvin Glass & Associates: *See*—
Kulesza, Ralph J.; and Breslow, Jeffrey D., 4,214,749, Cl. 273-1.00R.

Marysville Rotary Broom Service, Inc.: *See*—
Drumm, Arthur E., 4,214,339, Cl. 15-179.000.

Mascetti, B.: *See*—
Friedl, V. L.; and Mascetti, B., 4,214,516, Cl. 99-421.00P.

Maschinenfabrik Buckau R. Wolf Aktiengesellschaft: *See*—
Jochum, Friedrich; and Glaser, Heinz, 4,214,546, Cl. 114-270.000.

Maschinenfabrik Rau GmbH: *See*—
Rau, Willy; and Taus, Christian, 4,214,634, Cl. 172-179.000.

Mason, Lonnie L., to Mullican, Vernon T. Coupling device. 4,214,771, Cl. 280-402.000.

Mason, Martin K., to Hewlett-Packard Company. Digital servo positioning circuit. 4,215,301, Cl. 318-603.000.

Massachusetts Institute of Technology: *See*—
Kassakian, John G., 4,215,420, Cl. 364-802.000.

Massey, Alan W., to Post Office. Carriers for mounting lightning protectors. 4,215,380, Cl. 361-119.000.

Massey-Ferguson Services N.V.: *See*—
Bailey, Alfred J.; and Sargent, Ronald S., 4,214,537, Cl. 111-85.000.
Schmitt, Helwig, 4,214,425, Cl. 56-228.000.

Masterwork, Inc.: *See*—
Shepherd, Stephan C., 4,215,194, Cl. 430-323.000.

Mathias, Robert G.: *See*—
Holpuch, Robert J.; Mathias, Robert G.; and Young, Alan C., 4,214,502, Cl. 84-1.240.

Mathison, Donald W., to Product Design and Engineering, Inc. Device and method for forming an annular raised rib on a tubular member. 4,215,087, Cl. 264-320.000.

Matsuda, Minoru, to Honda Giken Kogyo Kabushiki Kaisha. Motorized two-wheel vehicle having a V-type engine with angularly offset cylinder heads. 4,214,644, Cl. 180-226.000.

Matsuda, Wakatake: *See*—
Hattori, Seizi; Nakagawa, Takehiko; Kobayashi, Kazuo; Makino, Koichi; and Matsuda, Wakatake, 4,215,158, Cl. 427-130.000.

Matsui, Fumio: *See*—
Inoue, Kazuhiro; and Matsui, Fumio, 4,214,927, Cl. 149-2.000.

Matsui, Sigeo: *See*—
Hagiwara, Zenzi; Matsui, Sigeo; Sakaguchi, Susumu; and Yamanaka, Yoshio, 4,215,008, Cl. 252-184.000.

Matsui, Toshiie: *See*—
Inoko, Michio; Kawatsuji, Shinichi; Matsui, Toshiie; and Yoshida, Shuu, 4,214,942, Cl. 156-500.000.

Matsumoto, Hiromitsu; and Yamashita, Ryuichi, to Yamaha Hatsukoki Kabushiki Kaisha. Induction system for an internal combustion engine. 4,214,561, Cl. 123-432.000.
Matsumoto, Mitsuo; and Tamura, Masuhiko, to Kuraray Co., Ltd. Hydroformylation of olefins. 4,215,077, Cl. 568-454.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Kitano, Motoi; Sumita, Isao; and Sakamoto, Yukio, 4,214,994, Cl. 210-490.000.
Matsutani, Shin. Training bar. 4,214,382, Cl. 35-29.00R.
Matthey Bishop, Inc.: *See*—
Hunter, James B.; and McGuire, George, 4,214,867, Cl. 432-29.000.
Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. Combating arthropods with N,N-dimethyl-O-(3-substituted-pyrazol-5-yl)-carbamic acid esters. 4,215,132, Cl. 424-273.00P.
Mawatari, Shizuo; and Nishida, Takashi, to Kuraray Co., Ltd. Aquatic antifouling method. 4,214,909, Cl. 106-16.000.
Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See*—
Ruhenstroth-Bauer, Gerhard; and Scherer, Reiner, 4,215,109, Cl. 424-177.000.
Maxwell, Mary E.; and Froats, Ronald F., to Ford Motor Company. Exhaust gas oxygen sensor and electrical connector arrangement. 4,214,472, Cl. 73-23.000.
Maxwell, Ronald K., to Racal-Vadic Inc. Automatic modem identification system. 4,215,243, Cl. 179-2.0DP.
Mayhew, Donald J.: *See*—
McCormick, Harold E.; Prasse, Herbert F.; Ott, William F.; and Mayhew, Donald J., 4,214,762, Cl. 277-138.000.
Mayhew, Raymond L.: *See*—
Lindemann, Martin K. O.; Mayhew, Raymond L.; O'Lenick, Anthony J., Jr.; and Verdicchio, Robert J., 4,215,064, Cl. 260-403.000.
Mazzarella, Emil D.; Wood, Leonard J., Jr.; and Maliczyszyn, Walter, to National Starch and Chemical Corporation. Method of sizing paper. 4,214,948, Cl. 162-158.000.
MCC Associates: *See*—
Chiang, David, 4,215,302, Cl. 318-696.000.
McCall, Francis L., to Specified Ceiling Systems. Drop ceiling air diffuser with horizontal discharge pattern. 4,214,512, Cl. 98-40.00D.
McCall, Samuel L., Jr., to Bell Telephone Laboratories, Incorporated. Instability and regenerative pulsation in optical cavities. 4,215,323, Cl. 332-7.510.
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Sakaguchi, Minoru; Oishi, Kazuaki; Nakano, Seizo; and Kishi, Tuneo, 4,215,256, Cl. 200-148.00D.

Nakazawa, Toru; Nagahashi, Keiichi; and Aizawa, Tatsuo, to Mita Industrial Company, Ltd. Photosensitive material for electrophotography having a polyvinyl carbazole derivative, phthalocyanine, and an electron-acceptor. 4,214,907, Cl. 430-82.000.

Nalco Chemical Company: *See*—
Payne, Charles C., 4,215,031, Cl. 260-40.00R.

Nanbu, Kiyoji: *See*—
Kobayashi, Shigeo; Yoshihara, Nori; Nanbu, Kiyoji; and Goto, Yukio, 4,215,032, Cl. 260-40.00R.

Nanjo, Hirotoshi; and Murakami, Katsuo, to Kokusan Denki Co., Ltd. Ignition system for an internal combustion engine. 4,214,566, Cl. 123-594.000.

Narco Scientific Industries, Inc.: *See*—
Smith, Frank P., 2nd., 4,215,346, Cl. 343-113.00R.

Narfgren, Rune, to AB Svenska Flaktfabriken. Connecting valve. 4,214,729, Cl. 251-149.200.

Nasr, Wagih I.: *See*—
Davis, Hyman R.; Nasr, Wagih I.; Roethlin, Siegfried M.; and Sherwood, Harold D., 4,214,975, Cl. 208-33.000.

Nasterlack, Joachim: *See*—
Bleidt, Rolf; Nasterlack, Joachim; Neubeck, Kurt; and Gareus, Achim, 4,214,474, Cl. 73-30.000.

National Blank Book Company, Inc.: *See*—
Sheehan, Robert F.; and Cassidy, Raymond T., 4,214,839, Cl. 402-31.000.

National Distillers and Chemical Corporation: *See*—
Memering, Leroy J.; and Pyle, Lorrin W., 4,215,035, Cl. 260-45.75W.

National Machinery Company, The: *See*—
Kin, Nelson I., 4,214,333, Cl. 10-20.000.

National Research Development Corporation: *See*—
Lowe, David J., 4,215,351, Cl. 346-136.000.

National Semiconductor Corporation: *See*—
Huang, Jen-Yen, 4,215,333, Cl. 338-322.000.

National Starch and Chemical Corporation: *See*—
Mazzarella, Emil D.; Wood, Leonard J., Jr.; and Maliczyszyn, Walter, 4,214,948, Cl. 162-158.000.
Ray-Chaudhuri, Dilip K.; and Meier, Eric A., 4,215,209, Cl. 526-292.000.

Nauflett, George W.: *See*—
Camp, Albert T.; Mueller, Kurt F.; and Nauflett, George W., 4,214,929, Cl. 149-109.400.

NCR Corporation: *See*—
Rhoads, Paul M., 4,215,392, Cl. 363-49.000.

Neaman, Raymond G.: *See*—
Christophersen, Steve; and Neaman, Raymond G., 4,215,079, Cl. 261-36.00R.

Nees, John: *See*—
Windisch, Lawrence; Nees, John; and Channing, Harry, 4,215,307, Cl. 320-2.000.

Neff, Steve W.; and Pate, Harold T., to Indian Head Inc. Electrical box and mounting bracket assembly. 4,214,668, Cl. 220-3.300.

Negishi, Kiyoshi; and Miyata, Katsuhiko, to Asahi Kogaku Kogyo Kabushiki Kaisha. Multi-layer flexible printed circuit board assembly. 4,215,387, Cl. 361-398.000.

Nelson, Alfred D.; and Jahnke, Merlin R., to Minnesota Mining and Manufacturing Company. Microwave oven window construction. 4,215,258, Cl. 219-10.55D.

Nelson, Bertel S.: *See*—
Nise, Wilfred C.; and Nelson, Bertel S., 4,214,337, Cl. 15-49.00R.

Nelson, Mark R.: *See*—
Flory, Robert E.; and Nelson, Mark R., 4,215,368, Cl. 358-139.000.

Netzow, Paul R.: *See*—
Weslow, Jerome H.; and Rodrian, James A., 4,215,410, Cl. 364-516.000.

Neubeck, Kurt: *See*—
Bleidt, Rolf; Nasterlack, Joachim; Neubeck, Kurt; and Gareus, Achim, 4,214,474, Cl. 73-30.000.

Neville, William A.: *See*—
Buddemeyer, Bruce D.; Neville, William A.; Rozzo, Nancy A.; and Bourne, Richard G., 4,214,996, Cl. 252-1.000.

Newman, Timothy L. Truck mounted railroad crane boom section. 4,214,665, Cl. 52-726.000.

Neyhart, Clarence J.: *See*—
Melamed, Sidney; Novak, Ronald W.; and Neyhart, Clarence J., 4,215,179, Cl. 428-451.000.

NGK Insulators, Ltd.: *See*—
Oda, Isao; Kaneno, Masayuki; and Yamamoto, Noboru, 4,214,666, Cl. 220-2.10R.
Sato, Mitsuhiro; and Kasahara, Noboru, 4,214,952, Cl. 204-14.00R.

Nidola, Antonio: *See*—
Spaziante, Placido M.; and Nidola, Antonio, 4,214,970, Cl. 204-265.000.

Niedermeyer, William P. Solar energy collector. 4,214,573, Cl. 126-438.000.

Nikly, Jean M. Cylinder head improvement, particularly for a diesel engine. 4,214,560, Cl. 123-41.770.

Nikolaev, Vladimir A.: *See*—
Balandin, Jury F.; Badanin, Vladimir I.; Gorynin, Igor V.; Gluskin, Lev Y.; Zvezdin, Jury I.; Nikolaev, Vladimir A.; Parshin, Anatoly M.; Zorev, Nikolai N.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Markov, Sergei I.; Sobolev, Jury V.; and Kozlov, Valentin I., 4,214,950, Cl. 176-87.000.

Niles, Hollandra P.: *See*—
Gaffar, Abdul; and Niles, Hollandra P., 4,215,105, Cl. 424-57.000.

Niles Parts Co., Ltd.: *See*—
Ohki, Nobuyoshi, 4,215,254, Cl. 200-83.00C.

Nippon Columbia Kabushikikaisha: *See*—
Tsuganezawa, Kunihiro; Kobayashi, Teruo; Harada, Shigehisa; Nishizawa, Yoichi; and Kusunose, Tomoya, 4,214,893, Cl. 75-0.5AA.

Nippon Electric Company, Ltd.: *See*—
Iijima, Yukihiko, 4,215,369, Cl. 358-146.000.
Kanemasa, Akira; and Sakaguchi, Hisashi, 4,215,415, Cl. 364-724.000.
Mizuno, Shoji, 4,215,374, Cl. 358-260.000.
Nishitani, Takao, 4,215,417, Cl. 364-736.000.
Usubuchi, Touru; and Iinuma, Kazumoto, 4,215,375, Cl. 358-261.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Adachi, Takeshi; and Okamoto, Eisaku, 4,214,500, Cl. 84-1.010.

Nippon Kayaku Kabushiki Kaisha: *See*—
Takahashi, Takeyoshi; Eto, Hirozumi; and Yoshioka, Osamu, 4,215,049, Cl. 260-343.30R.

Nippon Oil and Fats Co., Ltd.: *See*—
Inoue, Kazuhiro; and Matsui, Fumio, 4,214,927, Cl. 149-2.000.

Nippon Paint Co., Ltd.: *See*—
Mizuguchi, Ryuzo; Takahashi, Atushi; Ishikura, Shinichi; and Uenaka, Akimitsu, 4,215,028, Cl. 260-29.6TA.

Nippon Seren Co. Ltd.: *See*—
Makino, Shozaburo; and Otobe, Seiji, 4,214,717, Cl. 242-36.000.

Nippon Telegraph and Telephone Public Corporation: *See*—
Hattori, Seizi; Nakagawa, Takehiko; Kobayashi, Kazuo; Makino, Koichi; and Matsuda, Wakatake, 4,215,158, Cl. 427-130.000.

Nippon Zeon Co. Ltd.: *See*—
Joh, Yasushi, 4,214,990, Cl. 210-194.000.

Nise, Wilfred C.; and Nelson, Bertel S., to Clarke-Gravely Corporation. Floor polisher. 4,214,337, Cl. 15-49.00R.

Nishi, Hideo. Method for producing miniature lamps. 4,214,885, Cl. 65-42.000.

Nishida, Takashi: *See*—
Mawatari, Shizuo; and Nishida, Takashi, 4,214,909, Cl. 106-16.000.
Ohnishi, Takashi; Fujita, Yoshiji; Ishiguro, Michihiro; and Nishida, Takashi, 4,215,230, Cl. 568-341.000.

Nishioka, Tetsuji; Asano, Masaharu; Anzai, Makoto; and Hosaka, Akio, to Nissan Motor Company, Limited. Fuel control method and system with a circuit for operating valve in effective working range. 4,214,558, Cl. 123-489.000.

Nishitani, Takao, to Nippon Electric Company, Ltd. Two-term vector multiplier. 4,215,417, Cl. 364-736.000.

Nishizawa, Yoichi: *See*—
Tsuganezawa, Kunihiro; Kobayashi, Teruo; Harada, Shigehisa; Nishizawa, Yoichi; and Kusunose, Tomoya, 4,214,893, Cl. 75-0.5AA.

Nissan Chemical Industries, Ltd.: *See*—
Ozawa, Kiyomi; Ishii, Shigeru; Hayashi, Mamoru; Hirose, Masayoshi; and Nonaka, Ryoichi, 4,215,138, Cl. 424-282.000.

Nissan Motor Company, Limited: *See*—
Hosaka, Akio, 4,214,563, Cl. 123-437.000.
Nishioka, Tetsuji; Asano, Masaharu; Anzai, Makoto; and Hosaka, Akio, 4,214,558, Cl. 123-489.000.
Otani, Syuichi; and Kato, Shinichi, 4,214,802, Cl. 339-60.00M.

Nixon, John S., to Pilkington Brothers Limited. Rotary pan pelletizers. 4,214,863, Cl. 425-222.000.

Nonaka, Ryoichi: *See*—
Ozawa, Kiyomi; Ishii, Shigeru; Hayashi, Mamoru; Hirose, Masayoshi; and Nonaka, Ryoichi, 4,215,138, Cl. 424-282.000.

Noring, Josef: *See*—
Rudolph, Siegfried; and Noring, Josef, 4,214,989, Cl. 210-159.000.

Norlin Industries, Inc.: *See*—
Gross, Glenn M., 4,215,242, Cl. 179-1.00J.

Norprint Limited: *See*—
Figg, Anthony V. J., 4,214,938, Cl. 156-361.000.

Norris, Elwood G. Multi-speed tape cassette system. 4,215,377, Cl. 360-73.000.

Northern Telecom Limited: *See*—
St. Louis, Jacques R.; Thumm, Manfred; and Gale, Geoffrey N., 4,214,364, Cl. 29-827.000.

Northrop Corporation: *See*—
Bouchard, John R., 4,214,482, Cl. 73-504.000.

Norton Company: *See*—
Pemrick, Raymond E., 4,214,877, Cl. 51-295.000.

Norwalt Design, Inc.: *See*—
McDonald, Walter; and Seitel, Norbert F., 4,214,656, Cl. 198-380.000.

Nothdurft, Heinz: *See*—
Koster, Claus; Siegert, Joachim; and Nothdurft, Heinz, 4,214,476, Cl. 73-119.00A.

Novacek, Miroslav: *See*—
Pavek, Miloslav; Novacek, Miroslav; Fantl, Jiri; Kara, Jan; and Kasparek, Zdenek, 4,214,352, Cl. 28-254.000.

Novak, Ronald W.: *See*—
Melamed, Sidney; Novak, Ronald W.; and Neyhart, Clarence J., 4,215,179, Cl. 428-451.000.

NRM Corporation: *See*—
Enders, George E., 4,214,939, Cl. 156-398.000.

Nurse, William W. Pick up container for three point tractor hitch. 4,214,776, Cl. 280-760.000.

Nuwayser, Elie S., to Abcor, Inc. Glove for use with organic solvents. 4,214,321, Cl. 2-167.000.

O'Connor, John R.: *See*—
Dobson, Richard A.; and O'Connor, John R., 4,215,137, Cl. 424-274.000.

Oda, Isao; Kaneno, Masayuki; and Yamamoto, Noboru, to NGK Insulators, Ltd. Tubular discharge envelope composed of a polycrystalline transparent alumina and a high-pressure vapor discharge lamp using the same. 4,214,666, Cl. 220-2.10R.

Odermann, Charles R., to Singer Company, The. Low bobbin thread detection system including photodetector holder shielded with plastic lens. 4,214,542, Cl. 112-278.000.

Off, Joseph W. A.; Early, Judson H.; and Greer, William B., to Haggar Company. Apparatus for and method of depositing adhesive strips. 4,214,933, Cl. 156-238.000.

Ogawa & Co., Ltd.: *See*—
Ueno, Yasuhiko; Saeki, Yoshito; Akiyama, Takuya; and Fujita, Masao, 4,214,892, Cl. 71-93.000.

Ogawa, Hiroshi: *See*—
Takigawa, Hiroyoshi; Ogawa, Hiroshi; Ohkuni, Shinichiro; and Yahagi, Mitsuhisa, 4,214,618, Cl. 152-209.00D.

Ogawa, Iwakichi, to Takara Co., Ltd. Toy assembly with reconfigurable parts and removable appendages. 4,214,402, Cl. 46-17.000.

Ogawa, Masaki; Araki, Tamio; and Yamamoto, Shinji, to Bridgestone Tire Company Limited; and Ube Industries, Ltd. Coating rubber composition for tire cords. 4,215,021, Cl. 260-5.000.

Ogawa, Shinsaku; and Kanke, Tsutomu, to Asahi Kasei Kogyo Kabushiki Kaisha. System for electrolysis of sodium chloride by ion-exchange membrane process. 4,214,957, Cl. 204-98.000.

Ogawa, Toshiyuki: *See*—
Kono, Masao; Tani, Tatsuo; Ogawa, Toshiyuki; and Ariyama, Kenzo, 4,214,832, Cl. 355-8.000.

Ogino, Shuji; Ogura, Toshinobu; Okano, Yukio; and Nakamura, Akiyoshi, to Minolta Camera Kabushiki Kaisha. Variable soft focus lens system. 4,214,814, Cl. 350-188.000.

Ogura, Toshinobu: *See*—
Ogino, Shuji; Ogura, Toshinobu; Okano, Yukio; and Nakamura, Akiyoshi, 4,214,814, Cl. 350-188.000.

O'Hanlon, Edward J. Solar heat collector. 4,214,574, Cl. 126-446.000.

Ohashi, Saichiro, to Fuji Photo Film Co., Ltd. Photographic camera with built-in optical converter. 4,214,829, Cl. 354-197.000.

Ohki, Nobuyoshi, to Niles Parts Co., Ltd. Pressure switch with resiliently mounted contact. 4,215,254, Cl. 200-83.00C.

Ohkuni, Shinichiro: *See*—
Takigawa, Hiroyoshi; Ogawa, Hiroshi; Ohkuni, Shinichiro; and Yahagi, Mitsuhisa, 4,214,618, Cl. 152-209.00D.

Ohmura, Yoshimoto, to Sony Corporation. Record player. 4,214,756, Cl. 274-23.00R.

Ohnishi, Takashi; Fujita, Yoshiji; Ishiguro, Michihiro; and Nishida, Takashi, to Kuraray Co., Ltd. Production of ionones and irones by thermal rearrangement of propargylic alcohols. 4,215,230, Cl. 568-341.000.

Oishi, Kazuaki: *See*—
Sakaguchi, Minoru; Oishi, Kazuaki; Nakano, Seizo; and Kishi, Tuneo, 4,215,256, Cl. 200-148.00D.

Okaguchi, Shigeki: *See*—
Ito, Eiji; and Okaguchi, Shigeki, 4,214,568, Cl. 123-198.00R.

Okamoto, Eisaku: *See*—
Adachi, Takeshi; and Okamoto, Eisaku, 4,214,500, Cl. 84-1.010.

Okano, Yukio: *See*—
Ogino, Shuji; Ogura, Toshinobu; Okano, Yukio; and Nakamura, Akiyoshi, 4,214,814, Cl. 350-188.000.

Okayama, Kiyoaki; and Yamamoto, Yojiro, to Mitsubishi Petrochemical Company Limited. Novel α-glycol resin composition and process for its preparation. 4,215,210, Cl. 528-93.000.

Okita, Tsutomu; Satou, Masami; Hibino, Noburo; Katoh, Kazunobu; and Sawaguchi, Hiroshi, to Fuji Photo Film Co., Ltd. Photographic polyester film support. 4,215,030, Cl. 260-40.00R.

Olander, Karl E., to Alfa-Laval AB. Valve coupling for vacuum line. 4,214,552, Cl. 119-14.010.

Olander, Karl E., to Alfa-Laval AB. Pneumatic time delay device. 4,214,553, Cl. 119-14.080.

Olcott, Tyler K., to W. R. Grace & Co. Apparatus for making blow molded generally tire shaped articles. 4,214,865, Cl. 425-532.000.

O'Lenick, Anthony J., Jr.: *See*—
Lindemann, Martin K. O.; Mayhew, Raymond L.; O'Lenick, Anthony J., Jr.; and Verdicchio, Robert J., 4,215,064, Cl. 260-403.000.

Olin Corporation: *See*—
Cummings, Thomas L., 4,214,959, Cl. 204-99.000.
Kuo, Han C., 4,214,954, Cl. 204-32.00R.

Olman Heath Company: *See*—
Heath, Forrest D.; and Hoctor, Rodney K., 4,214,673, Cl. 221-259.000.

Olympus Optical Co., Ltd.: *See*—
Mizokami, Kazunori, 4,214,825, Cl. 354-33.000.
Nakamura, Kazuhiko, 4,214,973, Cl. 204-299.00R.
Sato, Masanobu; and Furuta, Kenzi, 4,215,378, Cl. 360-74.100.

Omni Spectra, Inc.: *See*—
Traynor, Robert J., 4,215,317, Cl. 330-256.000.
Omnithruster Inc.: *See*—
Dashew, Stanley A.; and Sutton, Charles D., 4,214,544, Cl. 114-151.000.
Omori, Kazumitsu, to Kabushiki Kaisha Meiki Seisakusho. Injection apparatus. 4,214,858, Cl. 425-145.000.
Omron Tateisi Electronics Co.: *See*—
Sakamoto, Tamaki; and Ikeda, Yasunori, 4,214,589, Cl. 128-680.000.
Ono, Kenji: *See*—
Sato, Kensuke; and Ono, Kenji, 4,214,591, Cl. 128-731.000.
Ono Pharmaceutical Co. Ltd.: *See*—
Hayashi, Masaki; Shimoji, Katsuichi; and Arai, Yoshinobu, 4,215,142, Cl. 424-305.000.
Onopchenko, Anatoli; Sabourin, Edward T.; and Selwitz, Charles M., to Gulf Research & Development Company. Selective hydrogenation of nitroaromatic acetylenes over an unsupported RuS_2 catalyst. 4,215,226, Cl. 568-705.000.
Onufry, Michael, Jr., to Communications Satellite Corporation. Video teleconference audio echo control unit. 4,215,252, Cl. 179-170.200.
Oota, Kazunari; and Yamazaki, Kazuhiro, to Kubota Ltd. Butterfly valve. 4,214,731, Cl. 251-306.000.
Oregon Aqua-Foods, Inc.: *See*—
McNeil, William J.; and Severson, Richard F., 4,214,551, Cl. 119-3.000.
Ornee, Michael W., to General Motors Corporation. Variable reluctance electromagnetic pickup. 4,215,286, Cl. 310-155.000.
Oronzio deNora Impianti Elettrochimici S.p.A.: *See*—
Spaziante, Placido M.; Giuffre, Luigi; Castoldi, Aldo; and Sioli, Giancarlo, 4,215,009, Cl. 252-184.000.
O'Rourke, Joseph D., to General Foods Corporation. Starch for instant pudding. 4,215,152, Cl. 426-579.000.
Ortho Pharmaceutical Corporation: *See*—
Chen, Robert H. K.; and Hajos, Zoltan G., 4,215,048, Cl. 260-340.600.
Goldstein, Gideon; and Heavner, George, 4,215,111, Cl. 424-177.000.
Goldstein, Gideon; and Heavner, George, 4,215,112, Cl. 424-177.000.
Osaka Oxygen Industries Ltd.: *See*—
Hagiwara, Zenzi; Matsui, Sigeo; Sakaguchi, Susumu; and Yamanaka, Yoshio, 4,215,008, Cl. 252-184.000.
Oscar Lucks Company: *See*—
Schopp, Fredrick R.; and Edmundson, Gordon A., 4,214,663, Cl. 209-552.000.
Ostanina, Vera A.: *See*—
Sokolov, Igor D.; Ostanina, Vera A.; Safrygin, Jury S.; Rutkovskaya, Tatyana I.; Antonova, Nina V.; and Naginskaya, Rakhil E., 4,215,100, Cl. 423-552.000.
Ostrowski, Carl L., to Federal Screw Works. Portable voice system for the verbally handicapped. 4,215,240, Cl. 179-1.0SM.
Otani, Syuichi; and Kato, Shinichi, to Nissan Motor Company, Limited. Waterproof electric connector. 4,214,802, Cl. 339-60.00M.
Otis Engineering Corporation: *See*—
Deaton, Thomas M.; and Kohn, Gary A., 4,214,606, Cl. 137-495.000.
Hardgrave, William D., 4,214,605, Cl. 137-495.000.
Otobe, Seiji: *See*—
Makino, Shozaburo; and Otobe, Seiji, 4,214,717, Cl. 242-36.000.
Ott, William F.: *See*—
McCormick, Harold E.; Prasse, Herbert F.; Ott, William F.; and Mayhew, Donald J., 4,214,762, Cl. 277-138.000.
Otto, Charles W., to General Electric Company. Prime mover rotor shaft having raised ridges. 4,215,287, Cl. 310-217.000.
Otto Engineering, Inc.: *See*—
Repplinger, Thomas J., 4,215,257, Cl. 200-153.00T.
Otto, Julian A., deceased; and Cooke, Ermalinda O., administratrix, to Allied Chemical Corporation. Cyanomethyl alkyl trithiocarbonates as insecticidal agents. 4,215,140, Cl. 424-301.000.
Oulsnam, Bryon T., to Coreplugs Limited. Stemming. 4,214,532, Cl. 102-30.000.
Owens-Corning Fiberglas Corporation: *See*—
Charter, Kenneth F., 4,214,407, Cl. 52-63.000.
Wojciechowski, Stanley P., 4,214,931, Cl. 156-169.000.
Owens-Illinois, Inc.: *See*—
Uhlig, Albert R.; and Stoll, Andrew J., III, 4,215,089, Cl. 264-516.000.
Oxford Hill Ltd.: *See*—
Thiele, Geraldine H., 4,215,144, Cl. 424-318.000.
Oxy Metal Industries Corp.: *See*—
Galloway, James H.; and Berman, Alby M., 4,215,394, Cl. 363-137.000.
Ozaki, Kiyoji: *See*—
Nakanishi, Hajime; Ozaki, Kiyoji; Shinozuka, Toshio; Izumi, Masato; Aiba, Takaaki; Kaji, Hisatsugu; Sumida, Yutaka; and Ishihara, Takao, 4,214,979, Cl. 208-128.000.
Ozawa, Kiyomi; Ishii, Shigeru; Hayashi, Mamoru; Hirose, Masayoshi; and Nonaka, Ryoichi, to Nissan Chemical Industries, Ltd. Insecticidal compounds of phenylcyclopropane carboxylic acid esters. 4,215,138, Cl. 424-282.000.
Ozodyne, Inc.: *See*—
van Gelder, Arthur, 4,214,887, Cl. 71-9.000.
Pacer Technology and Resources: *See*—
Hubbard, Dolph E., 4,215,173, Cl. 428-331.000.
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Kaufman, Jacquelyn; Ito, Thomas I.; and Nakahara, James H., to United States of America, Air Force. Diphospha-s-triazines. 4,215,072, Cl. 260-551.00P.
Packer, Marvin; and Black, Otis D., to RCA Corporation. Water soluble adhesive coating for mounting components to printed wiring boards. 4,215,025, Cl. 260-29.20R.
Paglia, Richard: *See*—
Reynard, John M.; Carignan, Thomas N.; Paglia, Richard; and Rich, Joseph F., 4,215,249, Cl. 179-111.00R.
Palmer, David A.; Kuhlmann, George E.; Naim, Houssam M.; Huie, Nicholas C.; and Schroeder, Hobe, to Standard Oil Company (Indiana). Production of ortho-phthalic acid and its conversion and recovery of phthalic anhydride. 4,215,053, Cl. 260-346.700.
Palmer, David A.; Kuhlmann, George E.; Horsfield, Sydney G.; and Schroeder, Hobe, to Standard Oil Company (Indiana). Production of liquid ortho-phthalic acid and its conversion to high purity phthalic anhdyride. 4,215,055, Cl. 260-346.700.
Palmer, David A.: *See*—
Schroeder, Hobe; and Palmer, David A., 4,215,051, Cl. 260-346.700.
Schroeder, Hobe; Palmer, David A.; Kuhlmann, George E.; Naim, Houssam M.; and Huie, Nicholas C., 4,215,052, Cl. 260-346.700.
Schroeder, Hobe; Kuhlmann, George E.; Horsfield, Sydney G.; and Palmer, David A., 4,215,054, Cl. 260-346.700.
Schroeder, Hobe; and Palmer, David A., 4,215,056, Cl. 260-346.700.
Papst, Georg; Schlicker, Volker; and Muller, Rolf, to Papst Motoren KG. Axial locating of horizontally extending tape drive shaft in cassette machine. 4,214,690, Cl. 226-49.000.
Papst Motoren KG: *See*—
Papst, Georg; Schlicker, Volker; and Muller, Rolf, 4,214,690, Cl. 226-49.000.
Parechanian, Haig S.: *See*—
Seibold, Robert W.; Parechanian, Haig S.; Weatherill, William T.; and Lowe, Robert E., 4,215,161, Cl. 427-228.000.
Park, Chung P., to Dow Chemical Company, The. Soft ethylenic polymer blend foams. 4,215,202, Cl. 521-81.000.
Parshin, Anatoly M.: *See*—
Balandin, Jury F.; Badanin, Vladimir I.; Gorynin, Igor V.; Gluskin, Lev Y.; Zvezdin, Jury I.; Nikolaev, Vladimir A.; Parshin, Anatoly M.; Zorev, Nikolai N.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Markov, Sergei I.; Sobolev, Jury V.; and Kozlov, Valentin I., 4,214,950, Cl. 176-87.000.
Pascher, Helmut: *See*—
Vogelsberg, Dieter; and Pascher, Helmut, 4,214,430, Cl. 57-6.000.
Patchornik, Avraham; Warshawsky, Abraham; Fridkin, Matityahu; and Kalir, Rami, to Yeda Research and Development Co. Ltd. Reagents from phenolic and 8-hydroxyquinolinic aldehyde oximes. 4,215,219, Cl. 546-179.000.
Pate, Harold T.: *See*—
Neff, Steve W.; and Pate, Harold T., 4,214,668, Cl. 220-3.300.
Patel, Gordhanbhai N.: *See*—
Yee, Kwok C.; Preziosi, Anthony F.; Patel, Gordhanbhai N.; Chance, Ronald R.; Miller, Granville G.; and Baughman, Ray H., 4,215,208, Cl. 526-285.000.
Patel, Harish A., to Kendall Company, The. Surgical dressing. 4,214,582, Cl. 128-156.000.
Patmore, Thomas R.; and Boyle, Daniel J., to Champion International Corporation. Insect capturing device. 4,214,400, Cl. 43-121.000.
Patnoi, Charles M.; Cooper, Daniel; and Zellers, Robert D., to International Medical Corporation. Method and apparatus for processing and displaying data in compressed form. 4,214,590, Cl. 128-710.000.
Patrinos, Peter. Condiment dispenser with hole-clearing means. 4,214,678, Cl. 222-149.000.
Paul, Jeffrey A.: *See*—
Chang, Yu-Wen; and Paul, Jeffrey A., 4,215,313, Cl. 455-326.000.
Paul Wurth, S.A.: *See*—
Mailliet, Pierre; and Ulveling, Leon, 4,214,608, Cl. 137-546.000.
Paulson, John W.: *See*—
Bergum, Bernard C.; Bredland, Alf M.; and Paulson, John W., 4,215,189, Cl. 429-217.000.
Pavek, Miloslav; Novacek, Miroslav; Fantl, Jiri; Kara, Jan; and Kasparek, Zdenek. Nozzle for texturing thread. 4,214,352, Cl. 28-254.000.
Pavicic, Mark J.; and Mahaffey, Jack L., II, to Texas Instruments Incorporated. Special function control system for a dual microprocessor programmable process control system. 4,215,399, Cl. 364-101.000.
Pawelczyk, Werner: *See*—
Woeckener, Willi; Pawelczyk, Werner; and Marquardt, Klaus-Dieter, 4,214,857, Cl. 425-141.000.
Payne, Charles C., to Nalco Chemical Company. Thickening additives for unsaturated polyester resins. 4,215,031, Cl. 260-40.00R.
Pearson, Glenn A. Novel resinous coating compositions. 4,215,172, Cl. 428-264.000.
Pebler, Alfred R.; and Ruka, Roswell J., to Westinghouse Electric Corp. Technique for reducing solid electrolyte cell drift. 4,214,967, Cl. 204-195.00S.
Pedersen, Vernon G., to Dacor Corporation. Breathing apparatus. 4,214,580, Cl. 128-204.260.
Pemrick, Raymond E., to Norton Company. Fine grit abrasive. 4,214,877, Cl. 51-295.000.
Peniche, Hector. Can stopper. 4,214,672, Cl. 220-234.000.
Pennwalt Corporation: *See*—
Piucci, Joseph A., 4,214,924, Cl. 148-18.000.

Pergler, Charles C.: *See*—
Karrip, Alexander A.; Knoblauch, Jack R.; Pergler, Charles C.; and Korell, Donald D., 4,214,726, Cl. 248-575.000.

Perkin-Elmer Corporation, The: *See*—
Buckley, William D., 4,215,192, Cl. 430-270.000.

Perkins Engines Limited: *See*—
Herenius, Frederik J., 4,214,443, Cl. 60-321.000.

Petersen, Otto; and Kersten, Franz, to Bayer Aktiengesellschaft. Method of determining the mass of liquids. 4,215,091, Cl. 422-75.000.

Peterson, John B., to W. R. Grace & Co. Dipstick for liquid nitrogen. 4,214,368, Cl. 33-126.70R.

Peterson, Lloyd D. Trash picking device. 4,214,336, Cl. 15-3.000.

Petrellis, Nicolas C.: *See*—
Brannen, Cecil G.; and Petrellis, Nicolas C., 4,215,067, Cl. 260-429.900.

Petrov, Boris N.: *See*—
Chabanov, Alim I.; Daniljuk, Valery V.; Valeev, Dzhavit K.; Bauer, Alfrid G.; Petrov, Boris N.; Tropin, Sergei N.; Chuguev, Dmitry I.; Ivanov, Ivan V.; Braun, Georgy A.; and Alexandrov, Valery M., 4,214,464, Cl. 72-8.000.

Petsche, Lee E., to Foldenauer Equipment Co., Inc. Meat tumbler. 4,214,518, Cl. 99-535.000.

Pfalzer, Lothar, to J. M. Voith GmbH. Process and device for removing printer's ink from a fiber suspension. 4,214,982, Cl. 209-164.000.

Pfister, Theodor: *See*—
Blank, Heinz U.; and Pfister, Theodor, 4,215,071, Cl. 260-543.00R.

Pfizer Inc.: *See*—
Kraska, Allen R., 4,215,146, Cl. 424-330.000.

Pham, Ngu T., to Thomson-CSF. Descriptive resume random access static memory element. 4,215,424, Cl. 365-174.000.

Philip Morris Incorporated: *See*—
Washington, James M., 4,214,508, Cl. 93-1.00C.

Philleo, Robert C., to Dayco Corporation. Flexible coupling and method of making same. 4,214,458, Cl. 64-11.00R.

Phillips, Calvert F., Jr., to United States of America, Air Force. Multiple channel electronic countermeasures radar receiver. 4,215,344, Cl. 343-18.00E.

Phillips Petroleum Company: *See*—
Drake, Charles A.; and Murtha, Timothy P., 4,215,019, Cl. 252-466.00B.
Reusser, Robert E.; and Hughes, William B., 4,215,017, Cl. 252-458.000.

Phlipot, Georges A.; Haeck, Jacques R. G.; and Kempen, Simone J., to Eastman Kodak Company. Diazo substituted amino-benzene salts and lithographic plate comprising same. 4,215,041, Cl. 260-141.000.

Pichler, Ludwig: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,215,133, Cl. 424-273.00R.

Pickett, William H., to Fanwall Corporation, The. Panel and joint system and transparent acoustic barriers employing same. 4,214,411, Cl. 52-144.000.

Pignal, Edmond: *See*—
Le Garfe, Roger J.; Pignal, Edmond; and Magloire, Charles J., 4,214,692, Cl. 228-44.10R.

Pilkington Brothers Limited: *See*—
Nixon, John S., 4,214,863, Cl. 425-222.000.

Pincon, Andrew J. Activated oxygen product and water treatment using same. 4,214,962, Cl. 204-157.10R.

Pinkney, Harry D., Jr., to Eppenger, Frank L. Sound operated control device. 4,215,241, Cl. 179-1.0VC.

Pinsley, Edward A.; and Schmidtke, Richard A., to United Technologies Corporation. Method for obtaining high beam quality in a gas dynamic laser. 4,215,321, Cl. 331-94.50G.

Pinto, Alwyn; and Ward, Stanley A., to Imperial Chemical Industries Limited. Ammonia synthesis process. 4,215,099, Cl. 423-360.000.

Pioneer Electronic Corporation: *See*—
Kawanabe, Yoshihiro, 4,215,318, Cl. 330-268.000.
Yamaguchi, Tadahiro; and Aizawa, Koki, 4,215,316, Cl. 329-50.000.

Pippert, Aaron J., to Utex Industries, Inc. Packing construction. 4,214,761, Cl. 277-123.000.

Pittsburgh-Des Moines Steel Company: *See*—
McKibbin, Dean K.; Hills, Richard E.; Blackman, Joel; and Kuhs, Franklin A., 4,214,671, Cl. 220-219.000.

Piucci, Joseph A., to Pennwalt Corporation. Method of improving surface characteristic of heat-treated metal. 4,214,924, Cl. 148-18.000.

Piusz, Peter G.: *See*—
Hovey, Richard J., Chu, Nori Y. C.; Piusz, Peter G.; and Fuchsman, Charles H., 4,215,010, Cl. 252-300.000.

Planes, Felipe; Eckerline, Charles A.; and Erickson, Gordon A., to Conwed Corporation. Space divider and acoustic panel. 4,214,646, Cl. 181-287.000.

Platonova, Ada T.: *See*—
Voronkov, Mikhail G.; Platonova, Ada T.; Annenkova, Vladislava Z.; Kononchuk, Galina M.; Kazimirovskaya, Valentina B.; Ugrjumova, Galina S.; and Annenkova, Valentina M., 4,215,106, Cl. 424-81.000.

Plempel, Manfred: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Plempel, Manfred; and Haller, Ingo, 4,215,131, Cl. 424-273.00R.

Plesinger, Boris M.: *See*—
Gee, Arthur; Largo, Edward J.; and Plesinger, Boris M., 4,214,706, Cl. 239-553.300.

Plessey Handel und Investments AG: *See*—
Stewart, William J., 4,214,810, Cl. 350-96.210.

Pletz, Murray J., to K-2 Corporation. Backpack load carrying system for hikers. 4,214,685, Cl. 224-211.000.

Plourde, Richard G., to Avid Corporation. Method of and means for loudspeaker sound wave distribution. 4,214,645, Cl. 181-148.000.

Plummer, Glenn W.: *See*—
McKee, William H.; and Plummer, Glenn W., 4,214,803, Cl. 339-103.00R.

Plunkett, Allan B.: *See*—
D'Atre, John D.; and Plunkett, Allan B., 4,215,305, Cl. 318-803.000.

Pohl, Ludwig; Eidenschink, Rudolf; Krause, Joachim; and Weber, Georg, to Merck Patent Gesellschaft mit beschrankter Haftung. Electro-optical modulator. 4,214,819, Cl. 350-334.000.

Poilblanc, Rene: *See*—
Kalck, Philippe; Poilblanc, Rene; and Gaset, Antoine, 4,215,066, Cl. 260-429.00R.

Polaroid Corporation: *See*—
Moodie, Donald E., 4,214,822, Cl. 352-78.00R.
Reynard, John M.; Carignan, Thomas N.; Paglia, Richard; and Rich, Joseph F., 4,215,249, Cl. 179-111.00R.

Polen, Karl L., to Alliance Machine Company, The. Crane safety reeving. 4,214,664, Cl. 212-142.100.

Polinsky, Charles K.: *See*—
Sinha, Rabindra K.; Polinsky, Charles K.; Cifrulak, S. David; and Wagner, Norman J., 4,215,096, Cl. 423-241.000.

Pollak, Fred H.: *See*—
Felsher, Hal C.; Pollak, Fred H.; and Bradley, Arthur, 4,214,916, Cl. 136-89.0SJ.

Pollard, Maurice G.; and Goodall, Roger M., to British Railways Board. Active suspensions for vehicles. 4,215,403, Cl. 364-424.000.

Polozov, Boris V.: *See*—
Ivanchev, Sergei S.; Enikolopov, Nikolai S.; Polozov, Boris V.; Syrov, Anatoly A.; Primachenko, Oleg N.; and Polyakov, Zorislav N., 4,214,914, Cl. 106-308.00Q.

Polyakov, Zorislav N.: *See*—
Ivanchev, Sergei S.; Enikolopov, Nikolai S.; Polozov, Boris V.; Syrov, Anatoly A.; Primachenko, Oleg N.; and Polyakov, Zorislav N., 4,214,914, Cl. 106-308.00Q.

Polychrome Corporation: *See*—
Rowe, William, 4,214,965, Cl. 204-159.150.

Ponticello, Ignazio S.; Hollister, Kenneth R.; and Tuites, Richard C., to Eastman Kodak Company. Polymers of amide compounds useful in photographic materials. 4,215,195, Cl. 430-496.000.

Post Office: *See*—
Massey, Alan W., 4,215,380, Cl. 361-119.000.

Potanin, Veniamin G.: *See*—
Bukhtiyarov, Ivan D.; Potanin, Veniamin G.; Alt, Viktor V.; Rakhmanin, Evgeny A.; Lyzlov, Vladimir M.; An, Viktor B.; Anikin, Valery P.; Koshevoi, Vladimir G.; Timonin, Nikolai G.; Zhdanov, Gennady P.; Gibert, Alfred I.; and Kolesnikov, Vladimir M., 4,215,404, Cl. 364-431.000.

Poujois, Robert: *See*—
Barbier, Daniel; Lancre, Jean C.; Lauwick, Bernard; and Poujois, Robert, 4,215,278, Cl. 307-116.000.

Pozhivanov, Alexandr M.: *See*—
Kolpakov, Serafim V.; Gurkov, Zinovy L.; Bondarenko, Oleg L.; Valtsov, Vladimir V.; Pozhivanov, Alexandr M.; Gugnin, Eduard D.; Radilov, Stanislav V.; and Bogdanov, Alexandr A., 4,214,856, Cl. 425-60.000.

PPG Industries, Inc.: *See*—
Bowser, George H., 4,215,164, Cl. 428-34.000.
Martin, Walter L., Jr., 4,214,884, Cl. 65-12.000.

Pradillon, Michel, to Etablissements Carpano & Pons. Liquid distributor, notably for sprinkling purposes. 4,214,602, Cl. 137-119.000.

Prager, Jay M.; Sadlow, Joseph F.; Farrand, John E.; Boissevain, Thomas A.; and Gonzales, Roman Y., to Modicon Division, Gould Inc. Modular panel construction for programmable controller. 4,215,386, Cl. 361-394.000.

Prasse, Herbert F.: *See*—
McCormick, Harold E.; Prasse, Herbert F.; Ott, William F.; and Mayhew, Donald J., 4,214,762, Cl. 277-138.000.

Prather, Jimmy F. Method and apparatus of feeding cotton to a gin. 4,214,347, Cl. 19-64.500.

Pratley, Stuart K.: *See*—
Morris, Ronald M.; and Pratley, Stuart K., 4,214,997, Cl. 252-8.800.

Precisa AG Rechenmaschinenfabrik, Firma: *See*—
Gelling, Helmut, 4,214,521, Cl. 101-96.000.

Precision Industries, Inc.: *See*—
Verwey, William G. A.; and Stanton, Stephen, 4,214,848, Cl. 414-77.000.

Precitronic Gesellschaft fur Feinmechanik und Electronic mbH: *See*—
Eichweber, Kurt, 4,215,270, Cl. 250-201.000.

Preiss, Michael; Konig, Hans-bodo; Metzger, Karl G.; and Feyen, Peter, to Bayer Aktiengesellschaft. 2-Hetero-acetamido-penicillanates and cephalosporinates. 4,215,118, Cl. 424-248.400.

Preziosi, Anthony F.: *See*—
Yee, Kwok C.; Preziosi, Anthony F.; Patel, Gordhanbhai N.; Chance, Ronald R.; Miller, Granville G.; and Baughman, Ray H., 4,215,208, Cl. 526-285.000.

Price, Robert J., to Caterpillar Tractor Co. Method for treating metal. 4,214,923, Cl. 148-12.00R.

Primachenko, Oleg N.: *See*—
Ivanchev, Sergei S.; Enikolopov, Nikolai S.; Polozov, Boris V.; Syrov, Anatoly A.; Primachenko, Oleg N.; and Polyakov, Zorislav N., 4,214,914, Cl. 106-308.00Q.

Pritchard, Eric K. Animation stand control system. 4,214,823, Cl. 352-87.000.

Pro-Patterns Inc.: *See*—
Zebelean, John, 4,214,754, Cl. 273-167.00H.
Procter & Gamble Company, The: *See*—
Hager, Douglas F., 4,215,040, Cl. 260-123.500.
Lucas, Malcolm B.; and Van Coney, H. Robert, 4,214,945, Cl. 156-634.000.
Product Design and Engineering, Inc.: *See*—
Mathison, Donald W., 4,215,087, Cl. 264-320.000.
Production Engineering Research Association of Great Britain: *See*—
Beard, James H., 4,214,362, Cl. 29-726.000.
Produits Chimiques Ugine Kuhlmann: *See*—
Kaick, Philippe; Poilblanc, Rene; and Gaset, Antoine, 4,215,066, Cl. 260-429.00R.
Strassel, Albert, 4,215,177, Cl. 428-413.000.
Prohaska, Hans: *See*—
Kohler, Alfred; and Prohaska, Hans, 4,214,344, Cl. 15-250.320.
Pruden, Barry B.: *See*—
Ranganathan, Ramaswami; Denis, Jean-Marie D.; and Pruden, Barry B., 4,214,977, Cl. 208-108.000.
Pryor, Harry H.; and Chumley, Calvin L., to UMC Industries, Inc. Coin transfer means for vendors. 4,214,654, Cl. 194-1.00E.
Purdue Research Foundation: *See*—
Dixon, Jack B., 4,215,090, Cl. 422-54.000.
Purpose Engineers Limited: *See*—
Delves, Elsworth R., 4,214,357, Cl. 29-233.000.
Putman, Charles R.: *See*—
Harris, Alexander T.; and Putman, Charles R., 4,215,095, Cl. 423-240.000.
Putman, Richard E.: *See*—
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; Jones, F. David; Edblad, Warren A.; and Wallace, Frank E., 4,215,406, Cl. 364-468.000.
Pyle, Lorrin W.: *See*—
Memering, Leroy J.; and Pyle, Lorrin W., 4,215,035, Cl. 260-45.75W.
Pyle, Walter R., to Chevron Research Company. Valve means for preventing fuel spillage from the discharge spout of a fuel dispensing nozzle. 4,214,614, Cl. 141-1.000.
Quaker Oats Company, The: *See*—
Teter, Edward C., 4,214,401, Cl. 46-14.000.
Quenneville, Raymond N., to Jacobs Manufacturing Company, The. Variable power transmission and absorption device. 4,214,652, Cl. 192-58.00R.
R. E. Phelon Company, Inc.: *See*—
Zentmeyer, Richard B., Jr., 4,215,284, Cl. 310-70.00A.
R.G.B. Laboratories, Inc.: *See*—
Buddemeyer, Bruce D.; Neville, William A.; Rozzo, Nancy A.; and Bourne, Richard G., 4,214,996, Cl. 252-1.000.
Racal-Vadic Inc.: *See*—
Maxwell, Ronald K., 4,215,243, Cl. 179-2.0DP.
Racciato, Joseph S.; and Cottrell, Ian W., to Merck & Co., Inc. Deacetylated borate-biosynthetic gum compositions. 4,214,912, Cl. 106-208.000.
Radilov, Stanislav V.: *See*—
Kolpakov, Serafim V.; Gurkov, Zinovy L.; Bondarenko, Oleg L.; Valtsov, Vladimir V.; Pozhivanov, Alexandr M.; Gugnin, Eduard D.; Radilov, Stanislav V.; and Bogdanov, Alexandr A., 4,214,856, Cl. 425-60.000.
Radke, Dietrich: *See*—
Kriegel, Ernst; Radke, Dietrich; Klein, Hans; and Arbeletche, Carlos, 4,215,101, Cl. 423-659.000.
Radzilowski, Ronald H., to Union Carbide Corporation. Method for the addition of a reactive metal to a molten metal bath. 4,214,899, Cl. 75-58.000.
Rakhmanin, Evgeny A.: *See*—
Bukhtiyarov, Ivan D.; Potanin, Veniamin G.; Alt, Viktor V.; Rakhmanin, Evgeny A.; Lyzlov, Vladimir M.; An, Viktor B.; Anikin, Valery P.; Koshevoi, Vladimir G.; Timonin, Nikolai G.; Zhdanov, Gennady P.; Gibert, Alfred I.; and Kolesnikov, Vladimir M., 4,215,404, Cl. 364-431.000.
Rakowicz, Jan A.: *See*—
Labbe, Francis A. M.; Rakowicz, Jan A.; and Ahern, Ronald A., 4,214,595, Cl. 131-108.000.
Rall, Gerhard; and Kastner, Hermann L., to Wilhelm Hainbuch GmbH & Co. Collet. 4,214,766, Cl. 279-46.00R.
Ramsey Controls, Inc.: *See*—
Boyd, Robert L.; and Fleming, Joseph W., 4,215,383, Cl. 361-210.000.
Ramsey Corporation: *See*—
McCormick, Harold E.; Prasse, Herbert F.; Ott, William F.; and Mayhew, Donald J., 4,214,762, Cl. 277-138.000.
Ramseyer, John W.: *See*—
Mace, Richard W., 4,215,306, Cl. 320-2.000.
Ranganathan, Ramaswami; Denis, Jean-Marie D.; and Pruden, Barry B., to Energy Mines and Resources Canada. Hydrocracking of heavy oils using iron coal catalyst. 4,214,977, Cl. 208-108.000.
Rao, Hiranya S.: *See*—
Coombes, Graham E.; and Rao, Hiranya S., 4,214,451, Cl. 60-648.000.
Rao, Prabhakar B.: *See*—
Jackson, Gary L.; and Rao, Prabhakar B., 4,214,633, Cl. 172-123.000.
Rapp, Heinz: *See*—
Bartel, Siegfried; Biedermann, Ernst; Rapp, Heinz; and Muller, Martin, 4,214,689, Cl. 226-21.000.
Raseley, LeRoy J.; Collier, Samuel J.; and McCarty, Henry G., to Ecolaire Incorporated. Liquid-gas separator. 4,214,883, Cl. 55-426.000.
Rath, Ewald. Hygienic and cosmetic sponge or the like. 4,214,341, Cl. 15-210.00R.
Rau, Willy; and Taus, Christian, to Maschinenfabrik Rau GmbH. Arrangement for coupling a cultivating attachment to a cultivating machine. 4,214,634, Cl. 172-179.000.
Ravizza, Raymond F., to Ampex Corporation. Track selection method and apparatus. 4,215,362, Cl. 358-8.000.
Ray-Chaudhuri, Dilip K.; and Meier, Eric A., to National Starch and Chemical Corporation. Anaerobic curing composition and process for preparing same. 4,215,209, Cl. 526-292.000.
Raymond, Robert F., to UOP Inc. Co-production of ethylene and benzene. 4,215,231, Cl. 585-251.000.
RCA Corporation: *See*—
Botez, Dan, 4,215,319, Cl. 331-94.50H.
Flory, Robert E.; and Nelson, Mark R., 4,215,368, Cl. 358-139.000.
Hawrylo, Frank Z., 4,214,550, Cl. 118-712.000.
Hopen, Leonard F., 4,214,798, Cl. 316-26.000.
Packer, Marvin; and Black, Otis D., 4,215,025, Cl. 260-29.20R.
Stanley, Thomas O., 4,215,293, Cl. 315-366.000.
Williams, Richard, 4,215,185, Cl. 429-111.000.
Rebajes, Francis. Mobile geometrical form. 4,214,747, Cl. 272-8.00R.
Redding, Thomas P.; Herbert, Glenn M.; and Caldwell, Alistair J., to Xerox Corporation. Sorting apparatus. 4,214,746, Cl. 271-294.000.
Redicon Corporation: *See*—
Bulso, Joseph D., Jr.; and Lewers, William R., 4,214,471, Cl. 72-349.000.
Reesen, Jorgen, to Eastman Kodak Company. Apparatus for producing duplex copies. 4,214,831, Cl. 355-3.00R.
Rege, Satish L.; and Woo, Beng-Yu, to Burroughs Corporation. Fast access charge coupled device memory organizations for a semiconductor chip. 4,215,423, Cl. 365-77.000.
Reh, Oswald R., to International Telephone and Telegraph Corporation. Fiber optic penetrator. 4,214,809, Cl. 350-96.200.
Reichl, Richard: *See*—
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Reimann, Roman M. Novelty button. 4,215,388, Cl. 362-104.000.
Reiner, Robert, to Siemens Aktiengesellschaft. Remote control system for an electrical apparatus. 4,215,349, Cl. 340-695.000.
Reingold, Lucien, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Combustion chambers operating on a supersonic stream chiefly for jet engines. 4,214,442, Cl. 60-270.00R.
Reinhard, Russell R.: *See*—
Dorawala, Tansukhlal G.; and Reinhard, Russell R., 4,215,018, Cl. 252-466.00J.
Reinhoudt, David N.: *See*—
De Jong, Feike; Reinhoudt, David N.; and Torny-Schutte, Gerridina J., 4,215,000, Cl. 252-8.55B.
Reiser, Gerald J., to Marquette Electronics, Inc. Junction box for electrocardiographic leads. 4,215,236, Cl. 174-59.000.
Reiser, John R.: *See*—
Durakis, Manuel A.; and Reiser, John R., 4,215,086, Cl. 264-135.000.
Renth, Ernst-Otto: *See*—
Mentrup, Anton; Schromm, Kurt; Renth, Ernst-Otto; Reichl, Richard; Traunecker, Werner; and Hoefke, Wolfgang, 4,215,119, Cl. 424-248.500.
Repplinger, Thomas J., to Otto Engineering, Inc. Precision toggle switch. 4,215,257, Cl. 200-153.00T.
Rescorp: *See*—
Clark, George H.; and Clark, Mary A., 4,214,381, Cl. 35-11.00R.
Research Corporation: *See*—
Malley, Arthur, 4,215,036, Cl. 260-112.00R.
Rittenburg, James H.; and Bayer, Robert C., 4,215,108, Cl. 424-92.000.
Resener, Baird E., to Western Electric Company, Inc. Microphone support with simultaneous adjustment of plural degrees of freedom. 4,215,250, Cl. 179-149.000.
Reusser, Robert E.; and Hughes, William B., to Phillips Petroleum Company. Catalyst for disproportionation/double-bond isomerization of olefins. 4,215,017, Cl. 252-458.000.
Reutlinger, Wolf-Dieter. Method and device for applying a detectable reference mark on a body to be balanced. 4,214,481, Cl. 73-462.000.
Rex, Leslie A. Compound drum. 4,214,504, Cl. 84-411.00R.
Reynard, John M.; Carignan, Thomas N.; Paglia, Richard; and Rich, Joseph F., to Polaroid Corporation. Method and device for controlling wrinkles in a vibratile diaphragm. 4,215,249, Cl. 179-111.00R.
Reynolds, Carl D.: *See*—
Ardary, Zane L.; and Reynolds, Carl D., 4,215,088, Cl. 264-332.000.
Reynolds, Thomas L.: *See*—
Brown, George W.; and Reynolds, Thomas L., 4,215,282, Cl. 307-364.000.
Rhoads, Paul M., to NCR Corporation. Inverter power supply. 4,215,392, Cl. 363-49.000.
Rhode Island Hospital: *See*—
Abts, Leigh R., 4,214,484, Cl. 73-632.000.
Riach, George. Rodent-repelling device. 4,215,429, Cl. 367-139.000.
Ribier, Jean G.; Dorsemaine, Maurice J.; and Sauvage, Bernard J., to Hamon-Sobelco, S.A. Liquid collecting device and use thereof in liquid-gas contacting apparatus. 4,215,080, Cl. 261-111.000.

Rich, Frank D., Jr., to F. D. Rich Housing Corp. Monolithic room enclosing module and method of forming the same. 4,214,408, Cl. 52-79.100.
Rich, Joseph F.: *See—*
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Richardson-Merrell Inc.: *See—*
Sjoerdsma, Albert, 4,215,130, Cl. 424-273.00R.
Richter, Arnold A.; and Edwards, Charles E. H., to United States of America, Army. Command fuzing system. 4,214,534, Cl. 102-215.000.
Richter, Carl; and Feth, Georg, to Cilag-Chemie A.G. 1-(2-Oxysubstituted-3-anilinopropyl)-imidazoles. 4,215,220, Cl. 548-341.000.
Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Fabry, Gyorgy; and Takacs, Istvan, 4,215,083, Cl. 261-155.000.
Rickrode, Jack A.; and Frame, Charles W., to Chambersburg Engineering Company. Method and apparatus for pressing wheels and other members onto or off of an axle. 4,214,363, Cl. 29-802.000.
Ricoh Company, Ltd.: *See—*
Kono, Masao; Tani, Tatsuo; Ogawa, Toshiyuki; and Ariyama, Kenzo, 4,214,832, Cl. 355-8.000.
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Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; and Homeyer, Bernhard, 4,215,132, Cl. 424-273.00P.
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Sakakibara, Shumpei, to Ajinomoto Company Incorporated. 7-(Arginylamino)-4-methylcoumarins. 4,215,047, Cl. 260-326.340.
Sakamoto, Tamaki; and Ikeda, Yasunori, to Omron Tateisi Electronics Co. Method and apparatus for blood pressure measurement including a true Korotkov sound detector. 4,214,589, Cl. 128-680.000.
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Sam Stein Associates, Inc.: *See—*
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Sasano, Kenji; and Shiramasa, Ichiro, to Mitsui Engineering and Shipbuilding Co., Ltd. Water collecting and distributing apparatus disposed in a lower portion of high speed filter basin. 4,214,992, Cl. 210-274.000.
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Sato, Masanobu; and Furuta, Kenzi, to Olympus Optical Co., Ltd. Automatic stop device for a tape recorder. 4,215,378, Cl. 360-74.100.
Sato, Mitsuhiro; and Kasahara, Noboru, to NGK Insulators, Ltd. Electrochemical treatment process. 4,214,952, Cl. 204-14.00R.
Sato, Shojiro, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Variable-capacity radial turbine. 4,214,850, Cl. 415-49.000.
Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Constant pressure printing mechanism for hand labeler. 4,214,529, Cl. 101-291.000.
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Schwartz, Robert C.; and Sparks, John E., to Horn and Gladden Lint Cleaner Co., Inc. Trash by-pass for burr and stick machine. 4,214,348, Cl. 19-203.000.
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Scotese, Anthony C.; and Santilli, Arthur A., to American Home Products Corporation. Antisecretory 4-oxy-3-carboxy or cyano-1,2-dihydro-2-oxo-1,8-naphthyridine derivatives. 4,215,123, Cl. 424-256.000.
Scotese, Anthony C.; Morris, Robert L.; and Santilli, Arthur A., to American Home Products Corporation. 7,8-Dihydro-2,5,8-trisubstituted-7-oxo-pyrido[2,3-d]pyrimidine-6-carboxylic acid derivatives. 4,215,216, Cl. 544-117.000.
Scull, Jon V.; and Shaffer, Patrick D., to Binks Manufacturing Company. Electrostatic spray coating apparatus. 4,214,709, Cl. 239-707.000.
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Sewell, Clinton J.: *See—*
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Shah, Ashok C.; and Strzelinski, Edward P., to Upjohn Company, The. Stable pharmaceutical formulations. 4,215,117, Cl. 424-248.400.
Shames, Harold: *See—*
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Shames, Sidney J.; and Shames, Harold. Self-cleaning aerator. 4,214,702, Cl. 239-110.000.
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Shannon, Larry S., Jr., to International Telephone and Telegraph Corporation. Telephone intercom circuit. 4,215,248, Cl. 179-99.00A.
Sharpe, Thomas R.: *See—*
Cherkofsky, Saul C.; and Sharpe, Thomas R., 4,215,135, Cl. 424-273.00B.
Shatterproof Glass Corporation: *See—*
Shintock, Eugene, 4,214,972, Cl. 204-298.000.
Shay, George C.; and Simon, Raphael A., to Corning Glass Works. Forming laminated sheet glass. 4,214,886, Cl. 65-121.000.
Sheehan, Robert F.; and Cassidy, Raymond T., to National Blank Book Company, Inc. Loose leaf binder. 4,214,839, Cl. 402-31.000.
Shell Development Company: *See—*
De Jong, Feike; Reinhoudt, David N.; and Torny-Schutte, Gerridina J., 4,215,000, Cl. 252-8.55B.
Shepherd, Stephan C., to Masterwork, Inc. Method for forming three-dimensional objects from sheet metal. 4,215,194, Cl. 430-323.000.
Sherwood, Harold D.: *See—*
Davis, Hyman R.; Nasr, Wagih I.; Roethlin, Siegfried M.; and Sherwood, Harold D., 4,214,975, Cl. 208-33.000.
Shima Idea Center Co., Ltd.: *See—*
Shima, Masahiro, 4,214,460, Cl. 66-75.200.
Shima, Masahiro, to Shima Idea Center Co., Ltd. Flat knitting machine. 4,214,460, Cl. 66-75.200.
Shimizu, Takeshi. Octopus catching game kit. 4,214,750, Cl. 273-1.00M.
Shimoji, Katsuichi: *See—*
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Shimokura, Toshiko, to Konishiroku Photo Industry Co., Ltd. Semi-wide angle objective lens. 4,214,815, Cl. 350-215.000.
Shin-Etsu Chemical Co. Ltd.: *See—*
Hagiwara, Zenzi; Matsui, Sigeo; Sakaguchi, Susumu; and Yamanaka, Yoshio, 4,215,008, Cl. 252-184.000.
Shino, Kuninori: *See—*
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Shintock, Eugene, to Shatterproof Glass Corporation. Sheet handling apparatus. 4,214,972, Cl. 204-298.000.
Shiozawa, Kazuo: *See—*
Uchida, Yasuo; Shiozawa, Kazuo; and Suzuki, Kiziro, 4,214,826, Cl. 354-31.000.
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Shogan, Regis P. Fishing alarm device. 4,214,394, Cl. 43-17.000.
Shoketsu Kinzoku Kogyo Kabushiki Kaisha: *See—*
Kakuminato, Tetsuo, 4,214,795, Cl. 303-89.000.
Siebels, Johann: *See—*
Langer, Manfred; and Siebels, Johann, 4,214,906, Cl. 75-208.00R.
Sieber, Walter P. Orthopedic reclining chair. 4,214,790, Cl. 297-326.000.
Siegert, Joachim: *See—*
Koster, Claus; Siegert, Joachim; and Nothdurft, Heinz, 4,214,476, Cl. 73-119.00A.
Siejko, Janina; and Jatymowicz, Hanna, to Centralny Osrodek Badawczo-Rozwojowy Przemyslu Betonow "Cebet". Method of production of cellular concrete. 4,214,911, Cl. 106-87.000.
Siemens Aktiengesellschaft: *See—*
Behn, Reinhard; Hoyler, Gerhard; and Voelkl, Walter, 4,215,385, Cl. 361-273.000.
Brunner, Heinrich; and Fischer, Karin, 4,215,405, Cl. 364-436.000.
Haendle, Joerg; and Sklebitz, Hartmut, 4,215,365, Cl. 358-111.000.
Heinzl, Joachim, 4,215,238, Cl. 178-23.00R.
Kobler, Ulrich, 4,215,329, Cl. 335-78.000.
Reiner, Robert, 4,215,349, Cl. 340-695.000.
Stark, Reinhard; and Steinmuller, Gunter, 4,215,413, Cl. 364-570.000.
Vogelsberg, Dieter; and Pascher, Helmut, 4,214,430, Cl. 57-6.000.
Signorelli, John A.; and Glanzner, Gary C. Metal printing plate. 4,214,530, Cl. 101-415.100.
Silkey, Bruce A. Wire reel support brackets. 4,214,718, Cl. 242-129.600.
Simmonds Precision Products, Inc.: *See—*
Maier, Lawrence C., 4,214,479, Cl. 73-304.00C.
Simon, Gerhard: *See—*
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Simpkin, William E.: *See—*
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Simple Pleasures, Inc.: *See—*
Crow, Floyd, 4,214,658, Cl. 206-244.000.
Simpson, John P. Adjustable bunting bat with protective shield. 4,214,751, Cl. 273-26.00B.
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Jones, Lawrence T.; Sims, Anson; and Howden, Ashley G., 4,214,674, Cl. 222-79.000.
Singer, Arnold J.: *See—*
Lover, Myron J.; Singer, Arnold J.; and Lynch, Donald M., 4,215,116, Cl. 424-217.000.
Singer Company, The: *See—*
Cook, Albert N., 4,214,540, Cl. 112-235.000.
Garron, Stephen A.; Sedlatschek, Robert; and Sudano, John J., 4,214,543, Cl. 112-320.000.
Herr, John A.; and Jaffe, Wolfgang, 4,214,539, Cl. 112-158.00E.
Odermann, Charles R., 4,214,542, Cl. 112-278.000.
Singer, Gunter: *See—*
Mack, Heinz; and Singer, Gunter, 4,214,367, Cl. 433-60.000.
Sinha, Rabindra K.; Polinsky, Charles K.; Cifrulak, S. David; and Wagner, Norman J., to Calgon Corporation. Removal of acidic contaminants from gas streams by caustic impregnated activated carbon. 4,215,096, Cl. 423-241.000.
Sioli, Giancarlo: *See—*
Spaziante, Placido M.; Giuffre, Luigi; Castoldi, Aldo; and Sioli, Giancarlo, 4,215,009, Cl. 252-184.000.
Sjoerdsma, Albert, to Richardson-Merrell Inc. Antihypertensive compositions of N-(2,6-dichlorophenyl)-4,5-dihydro-1H-imidazol-2-amine and N-(2-chloroethyl)-N-(1-methyl-2-phenoxyethyl)-benzenemethanamine. 4,215,130, Cl. 424-273.00R.
SK&F Lab Co.: *See—*
Lewis, Joseph J.; and Webb, Robert L., 4,215,217, Cl. 544-139.000.
Skinner, Robert T. J., to Lucas Industries Limited. Fuel injection pumping apparatus. 4,214,564, Cl. 123-502.000.
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Slack, Howard, to GKN Transmissions Ltd. Friction clutches. 4,214,653, Cl. 192-48.700.
Slade, Paul G.: *See—*
Kimblin, Clive W.; Heberlein, Joachim V. R.; Slade, Paul G.; Voshall, Roy E.; and Holmes, Francis A., 4,215,255, Cl. 200-144.00B.
Sliney, Harold E., to United States of America, National Aeronautics and Space Administration. Method of making bearing material. 4,214,905, Cl. 75-200.000.
Smirnov, Boris A.; Mochalov, Vyacheslav N.; Busygin, Valery P.; Utyamyshev, Rustam I.; and Semenov, Alexei I. Device for administering medicinal preparations. 4,214,584, Cl. 128-218.00M.
Smith, Frank P., 2nd., to Narco Scientific Industries, Inc. Navigation unit having time shared operation. 4,215,346, Cl. 343-113.00R.
Smith, Gilbert L.; Trick, Gilbert; and Swanson, David L. Baking oven. 4,215,266, Cl. 219-413.000.
Smith, James L., Jr. Feeding apparatus for nursing animals. 4,214,554, Cl. 119-71.000.
Smith Kline & French Laboratories Limited: *See—*
Durant, Graham J.; and Ganellin, Charon R., 4,215,125, Cl. 424-263.000.
Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., 4,215,126, Cl. 424-263.000.
Smith, Laurence D.: *See—*
Van Marter, Charles W.; Rofini, Raymond L.; and Smith, Laurence D., 4,215,428, Cl. 367-137.000.
Smith, Lawrence A., Jr., to Chemical Research and Licensing Company. Catalyst system for separating isobutene from C_4 streams. 4,215,011, Cl. 252-426.000.
Smith, Oliver W.: *See—*
Borden, George W.; Smith, Oliver W.; and Trecker, David J., 4,215,167, Cl. 428-203.000.
Smith, Phyllis. Blanket support and footrest. 4,214,327, Cl. 5-444.000.
Smith, Stuart B. Method of constructing a thermal insulation packet. 4,214,418, Cl. 53-452.000.
Smith, Thomas W., to McNeil-Akron, Inc. Apparatus and method for stabilization of a thermistor temperature sensor. 4,215,336, Cl. 340-177.0CA.
Smith, William D. Method of making wireline apparatus for use in earth boreholes. 4,214,693, Cl. 228-148.000.
Smolka, Heinz: *See—*
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Snow Brand Milk Products Co., Ltd: *See—*
Kai, Fumindo; Kumazawa, Eitaro; Ishioka, Yozo; and Ishida, Kazuyoshi, 4,215,153, Cl. 426-643.000.
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Sobajima, Shigenobu: *See—*
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Societe Anonyme dete: Alsthom-Atlantique: *See—*
Danel, Francois, 4,215,082, Cl. 261-124.000.
Societe Anonyme Francaise du Ferodo: *See—*
Dauvergne, Jean L. R., 4,214,642, Cl. 180-132.000.
Societe Anonyme: La Telemecanique Electrique: *See—*
Bouteille, Daniel, 4,214,607, Cl. 137-499.000.
Societe Chimique des Charbonnages-CdF Chimie: *See—*
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Societe Francaise des Produits pour Catalyse: *See—*
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Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
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Societe Nationale Elf Aquitaine (Production): *See—*
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Sokolov, Igor D.; Ostanina, Vera A.; Safrygin, Jury S.; Rutkovskaya, Tatyana I.; Antonova, Nina V.; and Naginskaya, Rakhil E. Method of producing potassium sulfate. 4,215,100, Cl. 423-552.000.
Solodar, A. John, to Monsanto Company. Acid separation. 4,215,065, Cl. 260-415.000.
Sony Corporation: *See—*
Doi, Toshitada; and Ito, Takashi, 4,215,335, Cl. 371-69.000.
Kato, Shinichiro, 4,214,719, Cl. 242-198.000.
Kobayashi, Tomio; and Miyairi, Hidesuke, 4,214,960, Cl. 204-129.650.
Kusaka, Satoshi; and Shino, Kuninori, 4,214,757, Cl. 274-23.00R.
Mitamura, Ichiro; and Yasumura, Masayuki, 4,215,296, Cl. 315-408.000.
Ohmura, Yoshimoto, 4,214,756, Cl. 274-23.00R.
Suzuki, Sadao, 4,215,372, Cl. 358-188.000.
Sorensen, Jens O. Thermal energy conversion system utilizing expandites. 4,214,449, Cl. 60-641.000.
Sorensen, Norman E.; and Latham, Eldon A., to United States of America, National Aeronautics and Space Administration. Aircraft engine nozzle. 4,214,703, Cl. 239-127.300.
Souriau & Cie: *See—*
de Mendez, Michel O., 4,214,812, Cl. 350-96.210.
Spann, Donald C. Body positioner and protection apparatus. 4,214,326, Cl. 5-431.000.
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Schwartz, Robert C.; and Sparks, John E., 4,214,348, Cl. 19-203.000.
Spaziante, Placido M.; and Nidola, Antonio, to Diamond Shamrock Technologies, S.A. Novel electrocatalytic electrodes. 4,214,970, Cl. 204-265.000.
Spaziante, Placido M.; Giuffre, Luigi; Castoldi, Aldo; and Sioli, Giancarlo, to Oronzio deNora Impianti Elettrochimici S.p.A. Purification method. 4,215,009, Cl. 252-184.000.
Specified Ceiling Systems: *See—*
McCall, Francis L., 4,214,512, Cl. 98-40.00D.
Spector, George: *See—*
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Lass, John L., 4,214,667, Cl. 220-3.200.
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Boehme, Herman F.; Srivastav, Avadhesh N. L.; and Lochridge, Joe C., 4,214,387, Cl. 37-195.000.
Srock, Rainer, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Lining part for the passenger compartment of an automobile. 4,214,788, Cl. 296-39.00R.
Stafford, Robert T. Fence system. 4,214,734, Cl. 256-24.000.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, to Boehringer Ingelheim GmbH. 2-[N-(2'-Chloro-4'-methyl-thienyl-3')-N-(cyclopropylmethyl)-amino]-2-imidazoline and salts thereof. 4,215,133, Cl. 424-273.00R.
Stamicarbon, B.V.: *See—*
Loontjens, Jacobus A., 4,215,013, Cl. 252-429.00B.
Stamires, Dennis: *See—*
Alafandi, Hamid; and Stamires, Dennis, 4,215,016, Cl. 252-455.00Z.
Standard Brands Incorporated: *See—*
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Standard Oil Company (Indiana): *See—*
Brannen, Cecil G.; and Petrellis, Nicolas C., 4,215,067, Cl. 260-429.900.

Palmer, David A.; Kuhlmann, George E.; Naim, Houssam M.; Huie, Nicholas C.; and Schroeder, Hobe, 4,215,053, Cl. 260-346.700.

Palmer, David A.; Kuhlmann, George E.; Horsfield, Sydney G.; and Schroeder, Hobe, 4,215,055, Cl. 260-346.700.

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Schroeder, Hobe; Palmer, David A.; Kuhlmann, George E.; Naim, Houssam M.; and Huie, Nicholas C., 4,215,052, Cl. 260-346.700.

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Schroeder, Hobe; and Palmer, David A., 4,215,056, Cl. 260-346.700.

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Stanford University: *See—*
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Starks Associates, Inc.: *See—*
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Starks, Fred W.: *See—*
Schultz, Robert J.; and Starks, Fred W., 4,215,070, Cl. 260-502.500.

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Steelcase, Inc.: *See—*
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Steiner Corporation: *See—*
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Steinmuller, Gunter: *See—*
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Stemme, Otto; Lermann, Peter; Wagensonner, Eduard; and Cocron, Istvan, to AGFA-Gevaert, A.G. Photographic-camera focussing system with comparator receiving required-and actual-setting data. 4,214,824, Cl. 354-23.00D.

Stendel, Wilhelm: *See—*
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Stening, Goran B.: *See—*
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Stephens, Joseph R.; and Witzke, Walter R., to United States of America, National Aeronautics and Space Administration. High toughness-high strength iron alloy. 4,214,902, Cl. 75-124.000.

Sterling Drug Inc.: *See—*
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Stern, Nathan, to Bobst-Champlain, Inc. Paster roller for high speed web handling equipment. 4,214,943, Cl. 156-504.000.

Steudle, Ernst: *See—*
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Stewart, William J., to Plessey Handel und Investments AG. Method of connecting optical fibres. 4,214,810, Cl. 350-96.210.

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Stiglich, Nicholas M.: *See—*
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Stoll, Andrew J., III: *See—*
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Stoller, David A.: *See—*
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Stommel & Voos Stahlstempelfabrik: *See—*
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Stoner, Eugene M., to ARES, Inc. Method of constructing welded metal skin boat hulls and hulls made thereby. 4,214,332, Cl. 9-6.00M.

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Stout Industries, Inc.: *See—*
Long, Charles H., 4,214,393, Cl. 40-613.000.

Strassel, Albert, to Produits Chimiques Ugine Kuhlmann. Process for treating polyvinyl fluoride and laminates prepared therefrom. 4,215,177, Cl. 428-413.000.

Strick Corporation: *See—*
Katz, Sol; Bertsch, Josef; and Yurgevich, Howard J., 4,214,789, Cl. 296-183.000.

Stridh, Stig-Ake A.: *See—*
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Strolle, Clifford H., to Du Pont de Nemours, E. I., and Company. Urethane enamel coating composition. 4,215,023, Cl. 260-22.0CB.

Strowe, Robert J., to McKesson Company. Flow control system for anesthesia apparatus. 4,215,409, Cl. 364-510.000.

Struble, Glenn E., to Diamond International Corporation. Box cover, blank therefor. 4,214,694, Cl. 229-31.0FS.

Structural Fibers, Inc.: *See—*
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Strzelinski, Edward P.: *See—*
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Stueben, Kenneth C.; and Deem, Mary L., to Union Carbide Corporation. Surfactant-promoted aldol reactions. 4,215,076, Cl. 568-461.000.

Stumpf, Charles H.: *See—*
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Stumpp, Robert A.: *See—*
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Sudano, John J.: *See—*
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Sudnishnikov, Boris V.; Tkach, Khaim B.; Kostylev, Alexandr D.; Kamensky, Veniamin V.; Tupitsyn, Konstantin K.; and Terin, Vladimir M. Method of controlling the reversing of a device for driving holes in earth and device for performing same. 4,214,638, Cl. 173-1.000.

Sukolics, Ronald D., to Swiss Aluminium Ltd. Expanded store front system. 4,214,415, Cl. 52-395.000.

Sumida, Yutaka: *See—*
Nakanishi, Hajime; Ozaki, Kiyoji; Shinozuka, Toshio; Izumi, Masato; Aiba, Takaaki; Kaji, Hisatsugu; Sumida, Yutaka; and Ishihara, Takao, 4,214,979, Cl. 208-128.000.

Sumita, Isao: *See—*
Kitano, Motoi; Sumita, Isao; and Sakamoto, Yukio, 4,214,994, Cl. 210-490.000.

Sumitomo Aluminum Smelting Company, Ltd.: *See—*
Inao, Jun-ichi; Yamada, Koichi; Harato, Takuo; and Kato, Hisakatsu, 4,215,094, Cl. 423-123.000.

Sumitomo Electric Industries, Ltd.: *See—*
Hayashi, Hiroaki; Fukuda, Kiyoshi; Kubo, Hiroshi; Yoshikawa, Noriyasu; and Takada, Hiroshi, 4,215,234, Cl. 174-15.00C.
Mori, Yoshikatsu, 4,214,845, Cl. 407-114.000.

Summar, James P.: *See—*
Knox, Harry D.; and Summar, James P., 4,214,556, Cl. 119-103.000.

Sumner, Emmons F.: *See—*
Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., 4,214,801, Cl. 339-59.00R.

Sumpter, Charles B., Jr.: *See—*
Zeigler, George E., Jr.; Sumpter, Charles B., Jr.; and Wortham, Carl A., 4,214,541, Cl. 112-262.300.

Sunahara, Kazuo: *See—*
Misumi, Akira; Suzuki, Yukio; and Sunahara, Kazuo, 4,215,180, Cl. 428-553.000.

Sundstrand Data Control, Inc.: *See—*
Bateman, Charles D., 4,215,334, Cl. 340-27.0AT.

Sunnen, Rudolf: *See—*
Schiffer, Gunter; Meisen, Klaus; Sunnen, Rudolf; and Heidan, Klaus, 4,214,461, Cl. 68-158.000.

Sunworks, Inc.: *See—*
Hopper, Thomas P., 4,214,575, Cl. 126-450.000.

Suovaniemi, Osmo; and Leskinen, Mikko, to Suovaniemi, Osmo A. Apparatus for liquid portioning and liquid transferring. 4,215,092, Cl. 422-100.000.

Suovaniemi, Osmo A.: *See—*
Suovaniemi, Osmo; and Leskinen, Mikko, 4,215,092, Cl. 422-100.000.

Supanich, Joseph: *See—*
Ahlen, Karl G.; Bergstrom, Per-Olof; and Supanich, Joseph, 4,214,489, Cl. 74-761.000.

Superior Surgical Mfg. Co., Inc.: *See—*
Belkin, Nathan L., 4,214,320, Cl. 2-114.000.

Supertex, Inc.: *See—*
Chao, Robert L., 4,215,281, Cl. 307-304.000.

Sutter, Hans-Rudolf, to Bulova Watch Company, Inc. Electronic watches. 4,214,434, Cl. 368-71.000.

Sutton, Charles D.: *See—*
Dashew, Stanley A.; and Sutton, Charles D., 4,214,544, Cl. 114-151.000.

Sutula, Raymond A.: *See—*
Ferrando, William A.; and Sutula, Raymond A., 4,215,190, Cl. 429-222.000.

Suzuki, Kiziro: *See—*
Uchida, Yasuo; Shiozawa, Kazuo; and Suzuki, Kiziro, 4,214,826, Cl. 354-31.000.

Suzuki, Nobuyuki: *See—*
Inoue, Fumio; and Suzuki, Nobuyuki, 4,215,295, Cl. 315-408.000.

Suzuki, Sadao, to Sony Corporation. Television signal interference elimination circuit including a trap circuit. 4,215,372, Cl. 358-188.000.

Suzuki, Yukio: *See—*
Misumi, Akira; Suzuki, Yukio; and Sunahara, Kazuo, 4,215,180, Cl. 428-553.000.

Svecia Silkscreen Maskiner AB: *See—*
Bille, Dag, 4,214,522, Cl. 101-128.400.

Swanson, David L.: *See—*
Smith, Gilbert L.; Trick, Gilbert; and Swanson, David L., 4,215,266, Cl. 219-413.000.

Swift, Harold E.: *See—*
Wu, Ching-Yong; and Swift, Harold E., 4,215,068, Cl. 260-464.000.

Swiss Aluminium Ltd.: *See—*
Anthony, William H., 4,214,961, Cl. 204-140.000.
Sukolics, Ronald D., 4,214,415, Cl. 52-395.000.
Wagner, Alfred; and Ames, Adolf, 4,214,469, Cl. 72-258.000.

Sylla, Klaus F.: *See—*
Kurzhals, Hans-Albert; and Sylla, Klaus F., 4,215,150, Cl. 426-430.000.

Syozo, Sasa: *See—*
Katsuto, Nagano; Syozo, Sasa; Takeshi, Nakada; and Yukio, Asakawa, 4,214,926, Cl. 148-175.000.

Syrov, Anatoly A.: *See—*
Ivanchev, Sergei S.; Enikolopov, Nikolai S.; Polozov, Boris V.; Syrov, Anatoly A.; Primachenko, Oleg N.; and Polyakov, Zorislav N., 4,214,914, Cl. 106-308.00Q.

Systems Control, Inc.: *See—*
Coombes, Graham E.; and Rao, Hiranya S., 4,214,451, Cl. 60-648.000.

Szmuszkovicz, Jacob, to Upjohn Company, The. Analgesic N-[2-(furylmethylamino and 2-thienylmethylamino)cycloaliphatic]benzamides. 4,215,114, Cl. 424-275.000.

Tabler, Charles P., to Kornylak Corporation. Continuous molding apparatus with cover belt. 4,214,864, Cl. 425-329.000.

Tabuchi, Seigo, to ITOH Iron & Steel Works Co. Ltd. Method of and an apparatus for soaking steel pieces. 4,214,868, Cl. 432-124.000.

Taft, Philip A., to Girling Limited. Suspension assemblies for vehicles. 4,214,775, Cl. 280-708.000.

Taggart, John E., to Tektronix, Inc. Automatic intensity control circuit for an oscilloscope. 4,215,294, Cl. 315-383.000.

Takacs, Istvan: *See—*
Fabry, Gyorgy; and Takacs, Istvan, 4,215,083, Cl. 261-155.000.

Takacs, Robert J.; Brunkhurst, Winfield S.; and Le Breton, Edward T., to Structural Fibers, Inc. Tie-down for accumulator bags. 4,214,611, Cl. 138-30.000.

Takada, Hiroshi: *See—*
Hayashi, Hiroaki; Fukuda, Kiyoshi; Kubo, Hiroshi; Yoshikawa, Noriyasu; and Takada, Hiroshi, 4,215,234, Cl. 174-15.00C.

Takahashi, Atushi: *See—*
Mizuguchi, Ryuzo; Takahashi, Atushi; Ishikura, Shinichi; and Uenaka, Akimitsu, 4,215,028, Cl. 260-29.6TA.

Takahashi, Kazuhisa: *See—*
Wataze, Manabu; Takahashi, Kazuhisa; Takamiya, Saburo; and Mitsui, Shigeru, 4,215,358, Cl. 357-56.000.

Takahashi, Takeyoshi; Eto, Hirozumi; and Yoshioka, Osamu, to Nippon Kayaku Kabushiki Kaisha. Antitumorigenic lactone derivative. 4,215,049, Cl. 260-343.30R.

Takamiya, Saburo: *See—*
Wataze, Manabu; Takahashi, Kazuhisa; Takamiya, Saburo; and Mitsui, Shigeru, 4,215,358, Cl. 357-56.000.

Takanashi, Itsuo; Nakagaki, Shintaro; Miyoshi, Tadayoshi; Motoyama, Koichiro; Miyazaki, Kenichi; and Yokokawa, Sumio, to Victor Company of Japan, Ltd. Color television signal generating apparatus. 4,215,364, Cl. 358-47.000.

Takara Co., Ltd.: *See—*
Ogawa, Iwakichi, 4,214,402, Cl. 46-17.000.

Takayama, Kazuo, to Fujitsu Ten Limited. Radio receiver. 4,215,312, Cl. 455-284.000.

Takenaka, Susumu; Ishii, Hideo; and Katooka, Masao, to Sansha Electric Manufacturing Co., Ltd. Artificial porcelain tooth manufacturing. 4,214,356, Cl. 29-160.600.

Takeshi, Nakada: *See—*
Katsuto, Nagano; Syozo, Sasa; Takeshi, Nakada; and Yukio, Asakawa, 4,214,926, Cl. 148-175.000.

Takigawa, Hiroyoshi; Ogawa, Hiroshi; Ohkuni, Shinichiro; and Yahagi, Mitsuhisa, to Bridgestone Tire Company Limited. Heavy duty pneumatic radial tire. 4,214,618, Cl. 152-209.00D.

Takita, Hajime: *See—*
Kato, Takefumi; and Takita, Hajime, 4,215,288, Cl. 313-394.000.

Tale-Lite Systems, Inc.: *See—*
Wills, Jack D.; and Clarkson, Frank R., 4,214,683, Cl. 224-42.200.

Tamura, Masuhiko: *See—*
Matsumoto, Mitsuo; and Tamura, Masuhiko, 4,215,077, Cl. 568-454.000.

Tamura, Raymond M. Pollution reducing aircraft propulsion. 4,214,722, Cl. 244-208.000.

Tani, Tatsuo: *See—*
Kono, Masao; Tani, Tatsuo; Ogawa, Toshiyuki; and Ariyama, Kenzo, 4,214,832, Cl. 355-8.000.

Tarbutton, Peter N., to Miles Laboratories, Inc. Test means and method for creatinine determination. 4,215,197, Cl. 435-18.000.

Taus, Christian: *See—*
Rau, Willy; and Taus, Christian, 4,214,634, Cl. 172-179.000.

Taylor, James C. Water recovery system. 4,214,454, Cl. 62-173.000.

Taylor, William M.: *See—*
Williams, Leonard E., Jr.; and Taylor, William M., 4,214,600, Cl. 137-72.000.

TDK Electronics Co., Ltd.: *See—*
Katsuto, Nagano; Syozo, Sasa; Takeshi, Nakada; and Yukio, Asakawa, 4,214,926, Cl. 148-175.000.

Te Ka de Felten & Guilleaume Fernmeldeanlagen GmbH: *See—*
Kittel, Ludwig; and Schwarz, Dieter, 4,215,311, Cl. 375-5.000.

Teijin Limited: *See—*
Yonemura, Utami; Chiba, Kiyoshi; Itoh, Kunio; Mitani, Yuji; and Sobajima, Shigenobu, 4,215,168, Cl. 428-215.000.

Tektronix, Inc.: *See—*
Taggart, John E., 4,215,294, Cl. 315-383.000.

Temco Products, Inc.: *See—*
Thomas, Morton I., 4,214,323, Cl. 4-237.000.

Temper Corporation: *See—*
Rode, John E., 4,214,465, Cl. 72-36.000.

Terao, Hiroyuki, to Casio Computer Co., Ltd. Calendar display apparatus. 4,214,433, Cl. 368-28.000.

Terin, Vladimir M.: *See—*
Sudnishnikov, Boris V.; Tkach, Khaim B.; Kostylev, Alexandr D.; Kamensky, Veniamin V.; Tupitsyn, Konstantin K.; and Terin, Vladimir M., 4,214,638, Cl. 173-1.000.

Termes, Richard A. Total environment photographic mount and photograph. 4,214,821, Cl. 352-70.000.

Tetens, Howard B.: *See—*
Jarrell, Edward C.; Marlow, Donald R.; Tetens, Howard B.; and Gulick, Joseph F., 4,215,347, Cl. 343-117.00R.

Teter, Edward C., to Quaker Oats Company, The. Simulated burner for a toy cooking range. 4,214,401, Cl. 46-14.000.

Texaco Development Corporation: *See—*
Gipson, Robert M., 4,215,059, Cl. 260-348.290.
Gipson, Robert M., 4,215,060, Cl. 260-348.290.
Gipson, Robert M., 4,215,061, Cl. 260-348.290.

Texaco Inc.: *See—*
Carlin, Joseph T.; Ware, James W.; Mills, Melvin E., Jr.; and Tyler, Timothy N., 4,214,999, Cl. 252-8.55D.
Carter, Walter H.; Christopher, Charles A.; and Grodde, Karl-Heinz, 4,214,475, Cl. 73-59.000.
Dorawala, Tansukhlal G.; and Reinhard, Russell R., 4,215,018, Cl. 252-466.00J.
Fein, Richard S., 4,215,002, Cl. 252-32.500.

Texas Instruments Incorporated: *See—*
Bunyard, Michael L.; and Burkett, Bobby G., 4,215,395, Cl. 364-101.000.
Burkett, Bobby G.; and Bunyard, Michael L., 4,215,398, Cl. 364-101.000.
Henry, Raymond W.; Burkett, Bobby G.; and Bunyard, Michael L., 4,215,396, Cl. 364-101.000.
Hom, Gim P., 4,215,397, Cl. 364-101.000.
Pavicic, Mark J.; and Mahaffey, Jack L., II, 4,215,399, Cl. 364-101.000.

Thaler, Warren A.: *See—*
Buckley, Donald J.; Thaler, Warren A.; and Kennedy, Joseph P., 4,215,022, Cl. 260-5.000.

Thekdi, Arvind C.; Hemsath, Klaus H.; and Vereecke, Frank J., to Midland-Ross Corporation. Burner for high temperature combustion air. 4,214,866, Cl. 432-12.000.

Thekdi, Arvind C.; Hemsath, Klaus H.; Conybear, James G.; Vereecke, Frank J.; and Verhoff, Steven H., to Midland-Ross Corporation. Furnace with radiant burndown tube. 4,214,869, Cl. 432-31.000.

Therm-O-Disc, Incorporated: *See—*
Wharton, Gerald R., 4,215,332, Cl. 337-394.000.

Thermatool Corporation: *See—*
Rudd, Wallace C.; and Udall, Humfrey N., 4,215,259, Cl. 219-10.430.

Thiele, Geraldine H., to Oxford Hill Ltd. Method of treating and controlling gingivitis. 4,215,144, Cl. 424-318.000.

Thomas, Morton I., to Temco Products, Inc. Raised toilet seat apparatus. 4,214,323, Cl. 4-237.000.

Thomas, Thomas A., Jr. Non-leaking pump spray valve. 4,214,682, Cl. 222-321.000.

Thompson, Neville: *See—*
Winsor, Jack O.; and Thompson, Neville, 4,214,445, Cl. 60-486.000.

Thomson-CSF: *See—*
Pham, Ngu T., 4,215,424, Cl. 365-174.000.

Thorsen, Walter J., to United States of America, Agriculture. Method for treatment of fibers with ozone-steam mixtures. 4,214,330, Cl. 8-149.200.

Thuener, Bruce W.: *See—*
Allen, Fred E.; Thuener, Bruce W.; and Turpin, Ronald F., 4,214,419, Cl. 53-543.000.

Thumm, Manfred: *See—*
St. Louis, Jacques R.; Thumm, Manfred; and Gale, Geoffrey N., 4,214,364, Cl. 29-827.000.

Tillett, George W.: *See*—
Whetstone, James A.; and Tillett, George W., 4,214,879, Cl. 55-191.000.
Tilman, Ted N. High direct and alternating current switch. 4,215,253, Cl. 200-82.00R.
Timex Corporation: *See*—
Leibowitz, Marshall; Willis, Alan; and George, Douglas, 4,214,820, Cl. 350-357.000.
Timmerman, Daniel M.: *See*—
De Winter, Walter F.; Timmerman, Daniel M.; De Cat, Arthur H.; and Kockelbergh, Godfried A., 4,215,196, Cl. 430-627.000.
Timms, Graham H.: *See*—
Horwell, David C.; and Timms, Graham H., 4,215,074, Cl. 260-563.00P.
Timonin, Nikolai G.: *See*—
Bukhtiyarov, Ivan D.; Potanin, Veniamin G.; Alt, Viktor V.; Rakhmanin, Evgeny A.; Lyzlov, Vladimir M.; An, Viktor B.; Anikin, Valery P.; Koshevoi, Vladimir G.; Timonin, Nikolai G.; Zhdanov, Gennady P.; Gibert, Alfred I.; and Kolesnikov, Vladimir M., 4,215,404, Cl. 364-431.000.
Tkach, Khaim B.: *See*—
Sudnishnikov, Boris V.; Tkach, Khaim B.; Kostylev, Alexandr D.; Kamensky, Veniamin V.; Tupitsyn, Konstantin K.; and Terin, Vladimir M., 4,214,638, Cl. 173-1.000.
TMC Corporation: *See*—
Krob, Erwin, 4,214,777, Cl. 280-605.000.
Wittmann, Heinz, 4,214,773, Cl. 280-631.000.
Tokas, Edward F.: *See*—
Gomez, I. Luis; and Tokas, Edward F., 4,215,024, Cl. 260-23.00S.
Toko Inc.: *See*—
Kameya, Kazuo, 4,215,391, Cl. 363-25.000.
Tokyo Electric Power Company, The: *See*—
Hayashi, Hiroaki; Fukuda, Kiyoshi; Kubo, Hiroshi; Yoshikawa, Noriyasu; and Takada, Hiroshi, 4,215,234, Cl. 174-15.00C.
Tokyo Shibaura Electric Co., Ltd.: *See*—
Fukuda, Takeo; Hanawa, Kazuhiko; and Urui, Kiyoshi, 4,215,251, Cl. 179-170.00R.
Kohyama, Susumu; and Kubota, Nobuhisa, 4,215,357, Cl. 357-24.000.
Murabayashi, Hideki; Kawakita, Katsuhiko; Nakamura, Kisaku; and Kobatake, Sadao, 4,214,903, Cl. 75-134.00D.
Tolhurst, Gary A.: *See*—
Hanesworth, Richard F.; Kim, Young D.; and Tolhurst, Gary A., 4,215,206, Cl. 525-441.000.
Tomassini, Maurizio: *See*—
Giovanni, Greco; and Tomassini, Maurizio, 4,214,953, Cl. 204-15.000.
Tominaga, Shinji; Imura, Toshinori; Yamada, Seiji; and Kogure, Yasuzi, to Minolta Camera Kabushiki Kaisha. Automatic focus control camera. 4,214,827, Cl. 354-127.000.
Torny-Schutte, Gerridina J.: *See*—
De Jong, Feike; Reinhoudt, David N.; and Torny-Schutte, Gerridina J., 4,215,000, Cl. 252-8.55B.
Toshiba Electric Equipment Corporation: *See*—
Inui, Kenichi; Kobayashi, Hisao; and Aoike, Nanjou, 4,215,292, Cl. 315-98.000.
'Totes', Incorporated: *See*—
Allen, James H., 4,214,383, Cl. 36-1.000.
Tour & Andersson Aktiebolag: *See*—
Josefsson, Hans E., 4,214,698, Cl. 236-42.000.
Toyo Boseki Kabushiki Kaisha: *See*—
Kobayashi, Shigeo; Yoshihara, Nori; Nanbu, Kiyoji; and Goto, Yukio, 4,215,032, Cl. 260-40.00R.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Fujimori, Fumio; Yokoi, Masatada; Ishikawa, Masakazu; Uemura, Hiroshi; and Shirai, Akira, 4,214,649, Cl. 188-73.500.
Fujioka, Yasuo; and Nakano, Kenichi, 4,214,444, Cl. 60-322.000.
Ito, Eiji; and Okaguchi, Shigeki, 4,214,568, Cl. 123-198.00R.
Kobayashi, Toyoaki; and Ishikawa, Masakazu, 4,214,648, Cl. 188-73.300.
Tracker Designs, Ltd: *See*—
Dominy, David A.; and Dodds, Gary M., 4,214,768, Cl. 280-809.000.
Traunecker, Werner: *See*—
Mentrup, Anton; Schromm, Kurt; Renth, Ernst-Otto; Reichl, Richard; Traunecker, Werner; and Hoefke, Wolfgang, 4,215,119, Cl. 424-248.500.
Traynor, Robert J., to Omni Spectra, Inc. Compensated operational amplifier circuit. 4,215,317, Cl. 330-256.000.
Trecker, David J.: *See*—
Borden, George W.; Smith, Oliver W.; and Trecker, David J., 4,215,167, Cl. 428-203.000.
Trenkle, Robert W.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Vock, Manfred H.; Luccarelli, Domenick, Jr.; Schmitt, Frederick L.; Stork, Gilbert; Macdonald, Timothy; and Liberman, Arthur L., 4,215,006, Cl. 252-174.110.
Trick, Gilbert: *See*—
Smith, Gilbert L.; Trick, Gilbert; and Swanson, David L., 4,215,266, Cl. 219-413.000.
Trickett, Elizabeth A.: *See*—
McKinzie, Howard; and Trickett, Elizabeth A., 4,215,155, Cl. 427-74.000.
Tropin, Sergei N.: *See*—
Chabanov, Alim I.; Daniljuk, Valery V.; Valeev, Dzhavit K.; Bauer, Alfrid G.; Petrov, Boris N.; Tropin, Sergei N.; Chuguev, Dmitry I.; Ivanov, Ivan V.; Braun, Georgy A.; and Alexandrov, Valery M., 4,214,464, Cl. 72-8.000.
TRW Inc.: *See*—
McKee, William H.; and Plummer, Glenn W., 4,214,803, Cl. 339-103.00R.
Muramatsu, John J., 4,215,416, Cl. 364-736.000.
Muramatsu, John J., 4,215,418, Cl. 364-757.000.
Wahlers, Richard L.; and Merz, Kenneth M., 4,215,020, Cl. 252-519.000.
Tsuganezawa, Kunihiro; Kobayashi, Teruo; Harada, Shigehisa; Nishizawa, Yoichi; and Kusunose, Tomoya, to Nippon Columbia Kabushikikaisha. Method of making a magnetic powder. 4,214,893, Cl. 75-0.5AA.
Tsujii, Kaoru: *See*—
Deguchi, Katsuhiko; Mino, Junryo; and Tsujii, Kaoru, 4,214,908, Cl. 106-13.000.
Tu, Hosheng, to UOP Inc. High octane FCC catalyst. 4,215,015, Cl. 252-453.000.
Tucker, Harold A, to B. F. Goodrich Company, The. Non-woven fibers coated with a polymer of ethylenically unsaturated blocked aromatic diisocyanates. 4,215,175, Cl. 428-375.000.
Tuites, Richard C.: *See*—
Ponticello, Ignazio S.; Hollister, Kenneth R.; and Tuites, Richard C., 4,215,195, Cl. 430-496.000.
Tuley, Eugene N.; Landis, Delmer H., Jr.; and Lozier, Paul W., to General Electric Company. Structural cooling air manifold for a gas turbine engine. 4,214,851, Cl. 415-115.000.
Tuley, Eugene N.; Landis, Delmer H., Jr.; and Lozier, Paul W., to General Electric Company. Variable turbine vane assembly. 4,214,852, Cl. 415-115.000.
Tuller, Harold W.; and Schulze, Stephen R., to Allied Chemical Corporation. Polyamide laminates. 4,215,176, Cl. 428-412.000.
Tuma, Wade B.; and Strohl, Niles E., to Atari, Inc. Method of making a radio frequency oscillator-modulator with ground metallization. 4,214,360, Cl. 29-829.000.
Tupitsyn, Konstantin K.: *See*—
Sudnishnikov, Boris V.; Tkach, Khaim B.; Kostylev, Alexandr D.; Kamensky, Veniamin V.; Tupitsyn, Konstantin K.; and Terin, Vladimir M., 4,214,638, Cl. 173-1.000.
Turetsky, Mark A.; and Robbins, Robert E. Point of purchase display. 4,214,661, Cl. 206-466.000.
Turpin, Ronald F.: *See*—
Allen, Fred E.; Thuener, Bruce W.; and Turpin, Ronald F., 4,214,419, Cl. 53-543.000.
Tyler, Timothy N.: *See*—
Carlin, Joseph T.; Ware, James W.; Mills, Melvin E., Jr.; and Tyler, Timothy N., 4,214,999, Cl. 252-8.55D.
Tylko, Jozef K., to Rugby Portland Cement Company Limited, The. Production of hydraulic cements and cement-forming materials. 4,215,232, Cl. 13-2.00P.
Ube Industries, Ltd.: *See*—
Ogawa, Masaki; Araki, Tamio; and Yamamoto, Shinji, 4,215,021, Cl. 260-5.000.
Uchida, Yasuo; Shiozawa, Kazuo; and Suzuki, Kiziro, to Konishiroku Photo Industry Co., Ltd. Method and device for controlling the exposure of a camera when photographing an object of which luminance is different on each surface section thereof. 4,214,826, Cl. 354-31.000.
Udall, Humfrey N.: *See*—
Rudd, Wallace C.; and Udall, Humfrey N., 4,215,259, Cl. 219-10.430.
Ueda, Hirotada: *See*—
Ejiri, Masakazu; and Ueda, Hirotada, 4,215,343, Cl. 340-711.000.
Uemura, Hiroshi: *See*—
Fujimori, Fumio; Yokoi, Masatada; Ishikawa, Masakazu; Uemura, Hiroshi; and Shirai, Akira, 4,214,649, Cl. 188-73.500.
Uenaka, Akimitsu: *See*—
Mizuguchi, Ryuzo; Takahashi, Atushi; Ishikura, Shinichi; and Uenaka, Akimitsu, 4,215,028, Cl. 260-29.6TA.
Ueno, Yasuhiko; Saeki, Yoshito; Akiyama, Takuya; and Fujita, Masao, to Ogawa & Co., Ltd. Sublimable herbicidal compositions containing triisopropyl-or tritertiary-butyl-s-trioxane carriers. 4,214,892, Cl. 71-93.000.
Ughi, Edoardo. Method for making soles. 4,214,335, Cl. 12-146.0BR.
Ugrjumova, Galina S.: *See*—
Voronkov, Mikhail G.; Platonova, Ada T.; Annenkova, Vladislava Z.; Kononchuk, Galina M.; Kazimirovskaya, Valentina B.; Ugrjumova, Galina S.; and Annenkova, Valentina M., 4,215,106, Cl. 424-81.000.
Uhlig, Albert R.; and Stoll, Andrew J., III, to Owens-Illinois, Inc. Method for blow molding hollow article with integrally bonded attachment. 4,215,089, Cl. 264-516.000.
Uhrig, Heinz; List, Karl-Hermann; and Deubel, Reinhold, to Hoechst Aktiengesellschaft. Dispersing agents for finely dividing and stabilizing dyestuffs, pigments and optical brighteners as well as the dispersions thereby obtained. 4,214,872, Cl. 8-589.000.
Ullman, Michael K.; David, Stephen T.; and Gallian, Claude E., to Mead Johnson & Company. Multi-fractionable tablet structure. 4,215,104, Cl. 424-15.000.
Ulveling, Leon: *See*—
Mailliet, Pierre; and Ulveling, Leon, 4,214,608, Cl. 137-546.000.
UMC Industries, Inc.: *See*—
Pryor, Harry H.; and Chumley, Calvin L., 4,214,654, Cl. 194-1.00E.
Unimation Inc.: *See*—
Blanchard, Stanley J., 4,215,337, Cl. 340-347.00P.

Union Carbide Corporation: *See*—
Borden, George W.; Smith, Oliver W.; and Trecker, David J., 4,215,167, Cl. 428-203.000.
Radzilowski, Ronald H., 4,214,899, Cl. 75-58.000.
Stueben, Kenneth C.; and Deem, Mary L., 4,215,076, Cl. 568-461.000.
Union Oil Company of California: *See*—
Young, Donald C., 4,214,888, Cl. 71-28.000.
United States Borax & Chemical Corporation: *See*—
Wilson, Martin, 4,214,710, Cl. 241-24.000.
United States Gypsum Company: *See*—
Wendt, Alan C., 4,214,414, Cl. 52-288.000.
United States of America
Agriculture: *See*—
Frank, Arlen W., 4,214,873, Cl. 8-116.00P.
Thorsen, Walter J., 4,214,330, Cl. 8-149.200.
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Knapp, Furn F., Jr., 4,215,045, Cl. 260-397.200.
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McCrea, Frank E. Support assembly for cryogenically coolable low-noise choked waveguide. 4,215,327, Cl. 333-252.000.
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Games, John E.; and Bitterli, William W., 4,215,408, Cl. 364-505.000.
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Berger, Sidney; and Cubieta, John J., 4,214,670, Cl. 220-70.000.
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Mitscher, Lester A., 4,215,062, Cl. 260-365.000.
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Giddings, John C., 4,214,981, Cl. 209-155.000.
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Maffet, Vere, 4,214,377, Cl. 34-12.000.
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Upton, Thomas E., to Dresser Industries, Inc. Well packer bypass valve seal assembly. 4,214,629, Cl. 166-129.000.
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Valtsov, Vladimir V.: *See*—
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Gingerich, Richard G. W.; Vanderpool, Clarence D.; Fedorchak, Mary A.; Ritsko, Joseph E.; and Cheresnowsky, Michael J., 4,214,895, Cl. 75-0.5AA.
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Kunnen, Jan; and van der Schee, Abraham C., 4,215,162, Cl. 427-435.000.
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Lataire, Philippe W. R. M. G.; Magetto, Gaston; and Van Eck, Jean-Louis, 4,215,279, Cl. 307-254.000.
van Gelder, Arthur, to Ozodyne, Inc. Sewage and waste water treatment. 4,214,887, Cl. 71-9.000.
van Hoorn, Jacques J. B. Micro-mill-mixer. 4,214,712, Cl. 241-46.00B.
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van Namen, Frederik T., to Centronics Data Computer Corp. Pin-feed assembly. 4,214,691, Cl. 226-74.000.
Varian Mat GmbH: *See*—
Franzen, Jochen, 4,215,411, Cl. 364-527.000.
Varta Batterie Aktiengesellschaft: *See*—
Gnida, Bernd; Simon, Gerhard; Buder, Eckart; and Schwartz, Hans-Jurgen, 4,215,187, Cl. 429-161.000.
Vecta Contract, Inc.: *See*—
Eberle, Gunter F., 4,214,725, Cl. 248-188.700.
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Blanco, Jose R.; and Venero, Aurelio O., 4,214,963, Cl. 204-158.00R.
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Saathoff, Deidrich J.; and Venkatasetty, Hanumanthiyna V., 4,215,188, Cl. 429-194.000.
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Virsen, Gary R. Display structure. 4,214,392, Cl. 40-605.000.

Vishkarev, Oleg M.: *See*—
Balandin, Jury F.; Badanin, Vladimir I.; Gorynin, Igor V.; Gluskin, Lev Y.; Zvezdin, Jury I.; Nikolaev, Vladimir A.; Parshin, Anatoly M.; Zorev, Nikolai N.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Markov, Sergei I.; Sobolev, Jury V.; and Kozlov, Valentin I., 4,214,950, Cl. 176-87.000.

Vock, Manfred H.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Vock, Manfred H.; Luccarelli, Domenick, Jr.; Schmitt, Frederick L.; Stork, Gilbert; Macdonald, Timothy; and Liberman, Arthur L., 4,215,006, Cl. 252-174.110.

Voelkl, Walter: *See*—
Behn, Reinhard; Hoyler, Gerhard; and Voelkl, Walter, 4,215,385, Cl. 361-273.000.

Vogel, Klaus: *See*—
Kleimenhagen, Gunter; Rosenkranz, Otto; Albrecht, Peter; Conow, Hans; Kother, Holger; Schmidt, Dieter; and Vogel, Klaus, 4,214,860, Cl. 425-149.000.

Vogelsberg, Dieter; and Pascher, Helmut, to Siemens Aktiengesellschaft. Method and apparatus for the layerwise SZ-stranding of elements to be stranded about a flexible core strand. 4,214,430, Cl. 57-6.000.

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Langer, Manfred; and Siebels, Johann, 4,214,906, Cl. 75-208.00R.

von Kemenczky, Miklos. Musical composer instrument and electronic player (electronic composer). 4,214,501, Cl. 84-1.030.

Voorhees, James M., Jr. Support for tubing or cables in buildings. 4,214,723, Cl. 248-68.00R.

Vorbach, Emil, to Mannesmann Aktiengesellschaft. Hot rolling pilger mill. 4,214,468, Cl. 72-189.000.

Voronkov, Mikhail G.; Platonova, Ada T.; Annenkova, Vladislava Z.; Kononchuk, Galina M.; Kazimirovskaya, Valentina B.; Ugrjumova, Galina S.; and Annenkova, Valentina M. Local hemostatic. 4,215,106, Cl. 424-81.000.

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Kimblin, Clive W.; Heberlein, Joachim V. R.; Slade, Paul G.; Voshall, Roy E.; and Holmes, Francis A., 4,215,255, Cl. 200-144.00B.

W-K-M Wellhead Systems, Inc.: *See*—
Diehl, Robert J., 4,214,778, Cl. 285-39.000.

W. R. Grace & Co.: *See*—
Funk, Andrew B.; and Williams, Max B., 4,215,225, Cl. 562-606.000.
Olcott, Tyler K., 4,214,865, Cl. 425-532.000.
Peterson, John B., 4,214,368, Cl. 33-126.70R.
Rosenberg, Arnold M.; and Gaidis, James M., 4,215,160, Cl. 427-177.000.

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Behensky, Gerhard; and Waldinger, Josef, 4,215,154, Cl. 427-50.000.

Waddell, Jerry D.; Scheeter, John J.; and Stoller, David A., to ACF Industries, Incorporated. Hopper outlet having vertically movable door bearing. 4,214,536, Cl. 105-282.00P.

Wade, James; and Jewett, Charles S., to Avco Corporation. Flexible coupling apparatus. 4,214,457, Cl. 64-4.000.

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Arrington, Jack P.; and Wade, Luke L., 4,215,129, Cl. 424-272.000.

Wagensonner, Eduard: *See*—
Stemme, Otto; Lermann, Peter; Wagensonner, Eduard; and Cocron, Istvan, 4,214,824, Cl. 354-23.00D.

Waggener, William N., to Sangamo Weston, Inc. Apparatus and method for filtering signals in a logging-while-drilling system. 4,215,425, Cl. 367-83.000.

Waggener, William N.; and Schroeder, Gene F., to Sangamo Weston, Inc. Carrier tracking apparatus and method for a logging-while-drilling system. 4,215,427, Cl. 367-83.000.

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Gerhard, Thomas, 4,214,535, Cl. 104-91.000.

Wagner, Alfred; and Ames, Adolf, to Swiss Aluminium Ltd. Process and device for the production of a composite section. 4,214,469, Cl. 72-258.000.

Wagner, Norman J.: *See*—
Sinha, Rabindra K.; Polinsky, Charles K.; Cifrulak, S. David; and Wagner, Norman J., 4,215,096, Cl. 423-241.000.

Wahlers, Richard L.; and Merz, Kenneth M., to TRW Inc. Electrical resistor material, resistor made therefrom and method of making the same. 4,215,020, Cl. 252-519.000.

Waldinger, Josef: *See*—
Behensky, Gerhard; and Waldinger, Josef, 4,215,154, Cl. 427-50.000.

Wallace, Frank E.: *See*—
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; Jones, F. David; Edblad, Warren A.; and Wallace, Frank E., 4,215,406, Cl. 364-468.000.
Gomola, John W.; Wood, William G.; Jones, F. David; Wallace, Frank E.; and Marano, Ross T., 4,215,407, Cl. 364-468.000.

Wallace, Franklin D.; and Carr, John C., to Standard Oil Company (Indiana). Removal of dissolved disodium terephthalate from aqueous solution also containing sodium hydroxide. 4,215,224, Cl. 562-485.000.

Walter, Henry J.; and Mack, William, to Clairol Inc. Blade assembly. 4,214,365, Cl. 30-224.000.

Wang, Cheng H., to Digital Equipment Corporation. Impact print head. 4,214,836, Cl. 400-124.000.

Ward, Bruce K. Vent and baffle unit. 4,214,510, Cl. 98-37.000.

Ward, Stanley A.: *See*—
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Ware, James W.: *See*—
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Warshawsky, Abraham: *See*—
Patchornik, Avraham; Warshawsky, Abraham; Fridkin, Matityahu; and Kalir, Rami, 4,215,219, Cl. 546-179.000.

Washington, James M., to Philip Morris Incorporated. Method and apparatus for making cigarette filters of filamentary material. 4,214,508, Cl. 93-1.00C.

Wasik, Janice E.: *See*—
Wasik, Ronald J.; and Wasik, Janice E., 4,214,369, Cl. 33-137.00R.

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Watson, James H. P.; and Jones, James P. E., to English Clays Lovering Pochin & Company, Limited. Magnetic separator for separating magnetizable particles from a fluid, method and apparatus. 4,214,986, Cl. 210-42.00S.

Watts, Grady; and Robinson, Michael, to Chemdet Sonic Systems, Inc. Apparatus for cleaning tanks. 4,214,705, Cl. 239-227.000.

Wavin B.V.: *See*—
de Putter, Warren J., 4,214,612, Cl. 138-144.000.

Weatherill, William T.: *See*—
Seibold, Robert W.; Parechanian, Haig S.; Weatherill, William T.; and Lowe, Robert E., 4,215,161, Cl. 427-228.000.

Webb, Robert L.: *See*—
Lewis, Joseph J.; and Webb, Robert L., 4,215,217, Cl. 544-139.000.

Weber, Georg: *See*—
Pohl, Ludwig; Eidenschink, Rudolf; Krause, Joachim; and Weber, Georg, 4,214,819, Cl. 350-334.000.

Weber, Klaus: *See*—
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Weiss, Viktor. Filtering apparatus and methods of exchanging particulate filter materials. 4,214,878, Cl. 55-96.000.

Welborn, Johnnie M.: *See*—
Barton, Paul R.; and Welborn, Johnnie M., 4,214,696, Cl. 229-40.000.

Wendt, Alan C., to United States Gypsum Company. Remountable unitary wall base trim. 4,214,414, Cl. 52-288.000.

Wenk, Raymond C. Snap-on clamp. 4,214,351, Cl. 24-255.0SL.

Werzalit-Pressholzwerk J.F. Werz Jr. KG: *See*—
Munk, Edmund; and Henke, Hermann, 4,214,861, Cl. 425-199.000.

Weslow, Harold J.: *See*—
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Weslow, Jerome H.; and Rodrian, James A., to Weslow, Jerome H.; Weslow, Harold J.; Weslow, Thomas A.; Netzow, Paul R.; and Weslow, Roland. Solar tracker. 4,215,410, Cl. 364-516.000.

Weslow, Roland: *See*—
Weslow, Jerome H.; and Rodrian, James A., 4,215,410, Cl. 364-516.000.

Weslow, Thomas A.: *See*—
Weslow, Jerome H.; and Rodrian, James A., 4,215,410, Cl. 364-516.000.

Wessels, Bernhard; and Fugger, Adolf, to Schmitz-Werke GmbH & Co. Awning mechanism. 4,214,621, Cl. 160-66.000.

Western Electric Company, Inc.: *See*—
Kalina, Robert F., 4,214,353, Cl. 29-25.420.
Resener, Baird E., 4,215,250, Cl. 179-149.000.
Scheidt, Gerald A., 4,214,432, Cl. 57-293.000.

Westinghouse Electric Corp.: *See*—
Choyke, Wolfgang J.; and Hoffman, Richard A., 4,214,818, Cl. 350-310.000.
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; Jones, F. David; Edblad, Warren A.; and Wallace, Frank E., 4,215,406, Cl. 364-468.000.
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Pebler, Alfred R.; and Ruka, Roswell J., 4,214,967, Cl. 204-195.00S.

Wolf, Charles B.; Meyer, Thomas N.; Fey, Maurice G.; and Harvey, Francis J., II, 4,214,736, Cl. 266-200.000.

Wetherton, William M., to Carman Industries, Inc. Drawdown hopper isolation system having isolators with fabric lays. 4,214,680, Cl. 222-161.000.

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Grey, David S.; and Wey, Robert A., 4,215,263, Cl. 219-121.00L.

Whang, Chi-Man. Measured quantity dispenser. 4,214,679, Cl. 222-158.000.

Wharton, Gerald R., to Therm-O-Disc, Incorporated. Probe thermostat with swivel. 4,215,332, Cl. 337-394.000.

Wheaton Industries: *See*—
Allen, Fred E.; Thuener, Bruce W.; and Turpin, Ronald F., 4,214,419, Cl. 53-543.000.

Whetstone, James A.; and Tillett, George W., to Tillett, George W. Degassing apparatus. 4,214,879, Cl. 55-191.000.

White Consolidated Industries, Inc.: *See*—
Mirow, George, 4,214,528, Cl. 101-248.000.

White, Fred K., to American Hospital Supply Corporation. Combination and method for mixing the contents of a blood collection tube and thereafter removing the mixing element. 4,214,874, Cl. 23-230.00B.

White, Philip D. Method and apparatus for producing ceramic ware. 4,215,265, Cl. 219-390.000.

White, Ralph E.: *See*—
Ritchie, Timothy J.; and White, Ralph E., 4,214,922, Cl. 148-9.500.

Wickersheim, Kenneth A., to Luxtron Corporation. Optical temperature measurement technique utilizing phosphors. 4,215,275, Cl. 250-459.000.

Widmer, Gilbert: *See*—
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Wiebus, Ernst: *See*—
Cornils, Boy; Konkol, Werner; Diekhaus, Gerhard; and Wiebus, Ernst, 4,215,073, Cl. 260-563.00D.

Wiesboeck, Robert A., to United States Steel Corporation. Apparatus for dividing gravity flow liquid stream. 4,214,609, Cl. 137-573.000.

Wiewiorowski, Edward I.: *See*—
Crnojevich, Ranko; Wiewiorowski, Edward I.; and Yu, Peter H., 4,214,900, Cl. 75-109.000.

Wild, Daniel: *See*—
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Wilfert, Thomas: *See*—
Knapp, Heinrich; Wilfert, Thomas; Grassle, Alfred; and Fussner, Paul, 4,214,565, Cl. 123-179.00L.

Wilhelm Hainbuch GmbH & Co.: *See*—
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Williams, Leonard E., Jr.; and Taylor, William M., to Cameron Iron Works, Inc. Valve. 4,214,600, Cl. 137-72.000.

Williams, Max B.: *See*—
Funk, Andrew B.; and Williams, Max B., 4,215,225, Cl. 562-606.000.

Williams, Richard, to RCA Corporation. Liquid junction schottky barrier solar cell. 4,215,185, Cl. 429-111.000.

Williams, William; and Crane, Michael L., to Delplast Limited. Manufacture of footwear. 4,214,334, Cl. 12-142.0RS.

Williamson, Dennis F.: *See*—
D'Atre, John D.; and Williamson, Dennis F., 4,215,304, Cl. 318-758.000.

Willis, Alan: *See*—
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Wills, Jack D.; and Clarkson, Frank R., to Tale-Lite Systems, Inc. Illuminated wheel cover. 4,214,683, Cl. 224-42.200.

Wilson, Arthur: *See*—
Lowe, Edward J.; Wilson, Arthur; and Minshall, Michael W., 4,215,098, Cl. 423-305.000.

Wilson, Martin, to United States Borax & Chemical Corporation. Froth flotation of zinc sulfide. 4,214,710, Cl. 241-24.000.

Wilson, Stephen S.: *See*—
Holsztynski, Wlodzimierz; and Wilson, Stephen S., 4,215,401, Cl. 364-200.000.

Wimpfheimer, Hans: *See*—
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Windisch, Lawrence; Nees, John; and Channing, Harry, to General Battery Corporation. Temperature controlled, auto timed, variable amperage cascading-water furmation method for use with high antimony and maintenance free lead-acid batteries. 4,215,307, Cl. 320-2.000.

Windmoller & Holscher: *See*—
Upmeier, Hartmut; Schmidt, Horst; and Brauner, Hans-Joachim, 4,214,934, Cl. 156-244.110.

Winsor, Jack O.; and Thompson, Neville, to Dresser Industries, Inc. Hydraulic circuitry for raise drill apparatus. 4,214,445, Cl. 60-486.000.

Winston, Billy G. Toothbrush holder and sterilizer. 4,214,657, Cl. 206-209.100.

Witteman Steel Mills: *See*—
Jaenson, Howard W., 4,214,623, Cl. 164-83.000.

Wittmann, Alois; and McGrath, Ronald J., to Hughes Aircraft Company. Dimensionally stable support structure. 4,214,406, Cl. 52-1.000.

Wittmann, Heinz, to TMC Corporation. Heel holder for release ski binding. 4,214,773, Cl. 280-631.000.

Witzke, Walter R.: *See*—
Stephens, Joseph R.; and Witzke, Walter R., 4,214,902, Cl. 75-124.000.

Woeckener, Willi; Pawelczyk, Werner; and Marquardt, Klaus-Dieter, to Hermann Berstorff Maschinenbau GmbH. Multi-roll calender. 4,214,857, Cl. 425-141.000.

Wojciechowski, Stanley P., to Owens-Corning Fiberglas Corporation. Method and apparatus for forming and processing roving. 4,214,931, Cl. 156-169.000.

Wolf, Anthony D., to Du Pont de Nemours, E. I., and Company. Triazolone herbicides. 4,214,891, Cl. 71-92.000.

Wolf, Charles B.; Meyer, Thomas N.; Fey, Maurice G.; and Harvey, Francis J., II, to Westinghouse Electric Corp. Arc heater melting system. 4,214,736, Cl. 266-200.000.

Woo, Beng-Yu: *See*—
Rege, Satish L.; and Woo, Beng-Yu, 4,215,423, Cl. 365-77.000.

Wood, Leonard J., Jr.: *See*—
Mazzarella, Emil D.; Wood, Leonard J., Jr.; and Maliczyszyn, Walter, 4,214,948, Cl. 162-158.000.

Wood, William G.: *See*—
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; Jones, F. David; Edblad, Warren A.; and Wallace, Frank E., 4,215,406, Cl. 364-468.000.
Gomola, John W.; Wood, William G.; Jones, F. David; Wallace, Frank E.; and Marano, Ross T., 4,215,407, Cl. 364-468.000.

Wortham, Carl A.: *See*—
Zeigler, George E., Jr.; Sumpter, Charles B., Jr.; and Wortham, Carl A., 4,214,541, Cl. 112-262.300.

Wright, Franklin J.: *See*—
Amick, James A.; Milewski, John V.; and Wright, Franklin J., 4,214,920, Cl. 148-1.500.

Wright, George H. Lawn debris pulverizer. 4,214,713, Cl. 241-57.000.

Wu, Ching-Yong; and Swift, Harold E., to Gulf Research & Development Company. Preparation of 1,3-dicyanocyclopentane. 4,215,068, Cl. 260-464.000.

Wurfel, Helmut. Process for hydrogenation of coal. 4,214,974, Cl. 208-10.000.

Wyden, Stephen. Hood with a cooling device and a precipitator. 4,214,455, Cl. 62-467.00R.

Wysocki, Peggie A. Board game apparatus. 4,214,755, Cl. 273-243.000.

Wysong, Robert D., to Du Pont de Nemours, E. I., and Company. Melt-extrudable cold water soluble films. 4,215,169, Cl. 428-220.000.

Xerox Corporation: *See*—
Acquaviva, Thomas, 4,214,740, Cl. 271-3.000.
Larsson, Stig-Goran, 4,215,354, Cl. 346-140.00R.
Moser, Rabin, 4,214,549, Cl. 118-60.000.
Redding, Thomas P.; Herbert, Glenn M.; and Caldwell, Alistair J., 4,214,746, Cl. 271-294.000.

Yahagi, Mitsuhisa: *See*—
Takigawa, Hiroyoshi; Ogawa, Hiroshi; Ohkuni, Shinichiro; and Yahagi, Mitsuhisa, 4,214,618, Cl. 152-209.00D.

Yamada, Koichi: *See*—
Inao, Jun-ichi; Yamada, Koichi; Harato, Takuo; and Kato, Hisakatsu, 4,215,094, Cl. 423-123.000.

Yamada, Seiji: *See*—
Tominaga, Shinji; Imura, Toshinori; Yamada, Seiji; and Kogure, Yasuzi, 4,214,827, Cl. 354-127.000.

Yamada, Tsugutoshi: *See*—
Nagashima, Kiyoshi; and Yamada, Tsugutoshi, 4,214,450, Cl. 60-648.000.

Yamaguchi, Tadahiro; and Aizawa, Koki, to Pioneer Electronic Corporation. AM stereo signal demodulation circuit. 4,215,316, Cl. 329-50.000.

Yamaguchi, Tamikazu, to Minolta Camera Kabushiki Kaisha. High speed telephoto lens system. 4,214,816, Cl. 350-218.000.

Yamaha Hatsukoki Kabushiki Kaisha: *See*—
Matsumoto, Hiromitsu; and Yamashita, Ryuichi, 4,214,561, Cl. 123-432.000.

Yamamoto, Noboru: *See*—
Oda, Isao; Kaneno, Masayuki; and Yamamoto, Noboru, 4,214,666, Cl. 220-2.10R.

Yamamoto, Shinji: *See*—
Ogawa, Masaki; Araki, Tamio; and Yamamoto, Shinji, 4,215,021, Cl. 260-5.000.

Yamamoto, Yojiro: *See*—
Okayama, Kiyoaki; and Yamamoto, Yojiro, 4,215,210, Cl. 528-93.000.

Yamanaka, Shogo; and Kouda, Masanori, to Atsugi Motor Parts Co. Automotive vehicle power steering system. 4,214,643, Cl. 180-148.000.

Yamanaka, Yoshio: *See*—
Hagiwara, Zenzi; Matsui, Sigeo; Sakaguchi, Susumu; and Yamanaka, Yoshio, 4,215,008, Cl. 252-184.000.

Yamashita, Ryuichi: *See*—
Matsumoto, Hiromitsu; and Yamashita, Ryuichi, 4,214,561, Cl. 123-432.000.

Yamaura, Tatsuo: *See*—
Hikida, Chuichi; Kishino, Takao; Mizohata, Tadashi; and Yamaura, Tatsuo, 4,215,290, Cl. 313-496.000.

Yamazaki, Kazuhiro: *See*—
Oota, Kazunari; and Yamazaki, Kazuhiro, 4,214,731, Cl. 251-306.000.

Yasuda, Hiroki, to Fuji Jukogyo Kabushiki Kaisha. Catalytic converter. 4,215,093, Cl. 422-179.000.

Yasumura, Masayuki: *See*—
Mitamura, Ichiro; and Yasumura, Masayuki, 4,215,296, Cl. 315-408.000.

Yeda Research and Development Co. Ltd.: *See*—
Patchornik, Avraham; Warshawsky, Abraham; Fridkin, Matityahu; and Kalir, Rami, 4,215,219, Cl. 546-179.000.

Yee, Kwok C.; Preziosi, Anthony F.; Patel, Gordhanbhai N.; Chance, Ronald R.; Miller, Granville G.; and Baughman, Ray H., to Allied Chemical Corporation. Thermochromic polyacetylenes containing urethane groups. 4,215,208, Cl. 526-285.000.

Yokoi, Masatada: *See*—
Fujimori, Fumio; Yokoi, Masatada; Ishikawa, Masakazu; Uemura, Hiroshi; and Shirai, Akira, 4,214,649, Cl. 188-73.500.

Yokokawa, Sumio: *See*—
Takanashi, Itsuo; Nakagaki, Shintaro; Miyoshi, Tadayoshi; Motoyama, Koichiro; Miyazaki, Kenichi; and Yokokawa, Sumio, 4,215,364, Cl. 358-47.000.

Yonemura, Utami; Chiba, Kiyoshi; Itoh, Kunio; Mitani, Yuji; and Sobajima, Shigenobu, to Teijin Limited. Laminated multilayer sheet structure and its utilization. 4,215,168, Cl. 428-215.000.

Yoshida, Shuu: *See*—
Inoko, Michio; Kawatsuji, Shinichi; Matsui, Toshiie; and Yoshida, Shuu, 4,214,942, Cl. 156-500.000.

Yoshihara, Nori: *See*—
Kobayashi, Shigeo; Yoshihara, Nori; Nanbu, Kiyoji; and Goto, Yukio, 4,215,032, Cl. 260-40.00R.

Yoshikawa, Noriyasu: *See*—
Hayashi, Hiroaki; Fukuda, Kiyoshi; Kubo, Hiroshi; Yoshikawa, Noriyasu; and Takada, Hiroshi, 4,215,234, Cl. 174-15.00C.

Yoshioka, Osamu: *See*—
Takahashi, Takeyoshi; Eto, Hirozumi; and Yoshioka, Osamu, 4,215,049, Cl. 260-343.30R.

Young, Alan C.: *See*—
Holpuch, Robert J.; Mathias, Robert G.; and Young, Alan C., 4,214,502, Cl. 84-1.240.

Young, Donald C., to Union Oil Company of California. Foliar fertilization method and composition. 4,214,888, Cl. 71-28.000.

Young, Niels O., to Arthur D. Little, Inc. Apparatus for measuring angular speed. 4,214,483, Cl. 73-518.000.

Young, William C., to Burroughs Corporation. Technique of growing thin silicon oxide films utilizing argon in the contact gas. 4,214,919, Cl. 148-1.500.

Youngberg, Fred A.; and Zierhut, Clarence D., to Lewis, John, a part interest. Retractable brush with rotatable actuating mechanism. 4,214,340, Cl. 15-184.000.

Yu, Peter H.: *See*—
Crnojevich, Ranko; Wiewiorowski, Edward I.; and Yu, Peter H., 4,214,900, Cl. 75-109.000.

Yukio, Asakawa: *See*—
Katsuto, Nagano; Syozo, Sasa; Takeshi, Nakada; and Yukio, Asakawa, 4,214,926, Cl. 148-175.000.

Yurgevich, Howard J.: *See*—
Katz, Sol; Bertsch, Josef; and Yurgevich, Howard J., 4,214,789, Cl. 296-183.000.

Zahn, Wolfgang: *See*—
Findeis, Gunter; Zahn, Wolfgang; and Weber, Klaus, 4,214,834, Cl. 355-46.000.

Zebelean, John, to Pro-Patterns Inc. Metal golf driver and method of making same. 4,214,754, Cl. 273-167.00H.

Zeigler, George E., Jr.; Sumpter, Charles B., Jr.; and Wortham, Carl A., to Fieldcrest Mills, Inc. Method for manufacturing pillowcases. 4,214,541, Cl. 112-262.300.

Zelahy, John W., to General Electric Company. Method for repairing a turbomachinery blade tip. 4,214,355, Cl. 29-156.80B.

Zellers, Robert D.: *See*—
Patnoi, Charles M.; Cooper, Daniel; and Zellers, Robert D., 4,214,590, Cl. 128-710.000.

Zentmeyer, Richard B., Jr., to R. E. Phelon Company, Inc. Pole-shoe magnet group for magnetomotive device. 4,215,284, Cl. 310-70.00A.

Zhdanov, Gennady P.: *See*—
Bukhtiyarov, Ivan D.; Potanin, Veniamin G.; Alt, Viktor V.; Rakhmanin, Evgeny A.; Lyzlov, Vladimir M.; An, Viktor B.; Anikin, Valery P.; Koshevoi, Vladimir G.; Timonin, Nikolai G.; Zhdanov, Gennady P.; Gibert, Alfred I.; and Kolesnikov, Vladimir M., 4,215,404, Cl. 364-431.000.

Zierhut, Clarence D.: *See*—
Youngberg, Fred A.; and Zierhut, Clarence D., 4,214,340, Cl. 15-184.000.

Zimmerman, Ulrich: *See*—
Husken, Dieter; Steudle. Ernst; and Zimmerman, Ulrich, 4,214,487, Cl. 73-753.000.

Zollinger, Hans-Rudolf, to H. A. Schlatter AG. Apparatus for welding two profile or section rods by means of resistance welding, especially for welding two rails. 4,215,260, Cl. 219-53.000.

Zorev, Nikolai N.: *See*—
Balandin, Jury F.; Badanin, Vladimir I.; Gorynin, Igor V.; Gluskin, Lev Y.; Zvezdin, Jury I.; Nikolaev, Vladimir A.; Parshin, Anatoly M.; Zorev, Nikolai N.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Markov, Sergei I.; Sobolev, Jury V.; and Kozlov, Valentin I., 4,214,950, Cl. 176-87.000.

Zukas, Peter W.; and Zukas, William. Wood cutting apparatus. 4,214,498, Cl. 83-796.000.

Zukas, William: *See*—
Zukas, Peter W.; and Zukas, William, 4,214,498, Cl. 83-796.000.

Zurflueh, Rene: *See*—
Fischer, Ulf; Schneider, Fernand; and Zurflueh, Rene, 4,215,139, Cl. 424-300.000.

Zvezdin, Jury I.: *See*—
Balandin, Jury F.; Badanin, Vladimir I.; Gorynin, Igor V.; Gluskin, Lev Y.; Zvezdin, Jury I.; Nikolaev, Vladimir A.; Parshin, Anatoly M.; Zorev, Nikolai N.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Markov, Sergei I.; Sobolev, Jury V.; and Kozlov, Valentin I., 4,214,950, Cl. 176-87.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF JULY, 1980

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Associated Mills, Inc.: *See*—
Peterson, Samuel F.; and Rundzaitis, Alfons, Re. 30,350, Cl. 239-394.000.

Batelle Development Corporation: *See*—
Voinov, Michel, Re. 30,353, Cl. 429-104.000.

Coffman, Moody L. Traffic flow control system. Re. 30,355, Cl. 340-40.000.

Du Pont de Nemours, E. I., and Company: *See*—
Hoehn, Harvey H.; and Richter, John W., Re. 30,351, Cl. 55-16.000.
Kwolek, Stephanie L., Re. 30,352, Cl. 260-30.80R.

Fraze, Ermal C.: *See*—
Silver, Francis M., Re. 30,349, Cl. 220-271.000.

Gordon, Paul, to Strategic Medical Research Corp. Novel ethereally monosubstituted monosaccharides. Re. 30,354, Cl. 536-4.000.

Hascoe, Norman, to Semi-Alloys, Inc. Solder preform. Re. 30,348, Cl. 228-56.000.

Hoehn, Harvey H.; and Richter, John W., to Du Pont de Nemours, E. I., and Company. Aromatic polyimide, polyester and polyamide separation membranes. Re. 30,351, Cl. 55-16.000.

Kwolek, Stephanie L., to Du Pont de Nemours, E. I., and Company. Optically anisotropic aromatic polyamide dopes. Re. 30,352, Cl. 260-30.80R.

Peterson, Samuel F.; and Rundzaitis, Alfons, to Associated Mills, Inc. Selectable multiple-nozzle showerhead. Re. 30,350, Cl. 239-394.000.

Richter, John W.: *See*—
Hoehn, Harvey H.; and Richter, John W., Re. 30,351, Cl. 55-16.000.

Rundzaitis, Alfons: *See*—
Peterson, Samuel F.; and Rundzaitis, Alfons, Re. 30,350, Cl. 239-394.000.

Semi-Alloys, Inc.: *See*—
Hascoe, Norman, Re. 30,348, Cl. 228-56.000.

Silver, Francis M., to Fraze, Ermal C. Easy-opening container wall with coreline vent. Re. 30,349, Cl. 220-271.000.

Strategic Medical Research Corp.: *See*—
Gordon, Paul, Re. 30,354, Cl. 536-4.000.

Voinov, Michel, to Batelle Development Corporation. Electric accumulator with a solid electrolyte. Re. 30,353, Cl. 429-104.000.

LIST OF PLANT PATENTEES

Duffett, William E.: *See*—
Meek, Jack M.; and Duffett, William E., 4,584, Cl. 74.000.
Meek, Jack M.; and Duffett, William E., 4,585, Cl. 77.000.
Meek, Jack M.; and Duffett, William E., 4,586, Cl. 78.000.

Meek, Jack M.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 4,584, 7-29-80, Cl. 74.000.

Meek, Jack M.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 4,585, 7-29-80, Cl. 77.000.

Meek, Jack M.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 4,586, 7-29-80, Cl. 78.000.

Saville, F. Harmon. Rose plant. 4,582, 7-29-80, Cl. 7.000.

Weeks, O. L. Rose plant. 4,583, 7-29-80, Cl. 12.000.

Williams, Ernest D. Miniature rose plant. 4,579, 7-29-80, Cl. 7.000.

Williams, Ernest D. Miniature rose plant. 4,580, 7-29-80, Cl. 7.000.

Williams, Ernest D. Miniature rose plant. 4,581, 7-29-80, Cl. 7.000.

Yoder Brothers, Inc.: *See*—
Meek, Jack M.; and Duffett, William E., 4,584, Cl. 74.000.
Meek, Jack M.; and Duffett, William E., 4,585, Cl. 77.000.
Meek, Jack M.; and Duffett, William E., 4,586, Cl. 78.000.

LIST OF DESIGN PATENTEES

A.T.N. S.p.A.: *See*—
Cura', Mario, 256,112, Cl. D12-70.000.

Adamson, Gerald J. Receptacle container. 256,089, 7-29-80, Cl. D7-194.000.

Adamson, Lee E.; and Hauger, Robert B., to Beatrice Foods Co. Soft serve machine. 256,124, 7-29-80, Cl. D15-82.000.

Alessi, Joseph. Mute for brass instruments. 256,131, 7-29-80, Cl. D17-13.000.

Alger, Andrew L.: *See*—
Polhemus, Marlan H.; and Alger, Andrew L., 256,117, Cl. D14-2.000.

Amberg, Christopher P., to Owens-Illinois, Inc. Packaging container for food or the like. 256,097, 7-29-80, Cl. D9-219.000.

Arko, Robert E.; Bellino, Joseph A.; and Hein, Richard A., to Teletype Corporation. Combined punch and reader for perforated tape. 256,120, 7-29-80, Cl. D14-49.000.

Associated Engineering Limited: *See*—
Hunt, Norman, 256,116, Cl. D13-37.000.

Ayer, Larry C.: *See*—
Hemperly, Lyle D., Jr.; Ayer, Larry C.; and Trout, David H., 256,126, Cl. D15-146.000.

Baril, Conrad J. Mileage reminder. 256,100, 7-29-80, Cl. D10-46.000.

Basic Energy Conservation Services, Inc.: *See*—
Garritson, John F., 256,156, Cl. D23-151.000.

Bateman, Robert F.: *See*—
Croyle, Jack V.; and Bateman, Robert F., 256,078, Cl. D7-16.000.

Beatrice Foods Co.: *See*—
Adamson, Lee E.; and Hauger, Robert B., 256,124, Cl. D15-82.000.

Beihoffer, Randall A.: *See*—
Hinklin, Darrell W.; and Beihoffer, Randall A., 256,090, Cl. D8-08.000.

Bell, Evan W.: *See*—
Dunbar, Donald; Bell, Evan W.; and Dziewulski, Ted, 256,110, Cl. D11-153.000.

Bell, George G., Jr. Utility load body. 256,114, 7-29-80, Cl. D12-102.000.

Bell & Howell Company: *See*—
Overman, John W., 256,127, Cl. D16-02.000.

Beller, Frank W., to Recreation Systems Co. Recreation swing. 256,149, 7-29-80, Cl. D21-246.000.

Bellino, Joseph A.: *See*—
Arko, Robert E.; Bellino, Joseph A.; and Hein, Richard A., 256,120, Cl. D14-49.000.

Bielke, Warren: *See*—
Haerr, Raymond H.; and Bielke, Warren, 256,162, Cl. D24-52.000.

Birnkrant, Melvyn, to Colorforms. Collapsible toy building. 256,143, 7-29-80, Cl. D21-114.000.

Borisoff, Paul H. Flash attachment bracket for a camera. 256,128, 7-29-80, Cl. D16-47.000.

Bounds, William E. Sugar dispenser. 256,080, 7-29-80, Cl. D7-52.000.

Brockman, Raymond G.; and Nadeau, William C., to Nadeau, William C. Cup with tongue depressor. 256,077, 7-29-80, Cl. D7-6.000.

Buttura, John, Sr. Combined slant marker and base. 256,174, 7-29-80, Cl. D99-17.000.

Buttura, John, Sr. Combined slant marker and base. 256,175, 7-29-80, Cl. D99-17.000.

C. Joseph Lamy GmbH: *See—*
Muller, Gerd A., 256,136, Cl. D19-51.000.
Caroee, Claus J.; Frederiksen, Ole; and Christensen, Boerge J. R. Serving tray. 256,073, 7-29-80, Cl. D6-113.000.
Cartier, Inc.: *See—*
Durante, Alfred J., 256,105, Cl. D11-4.000.
CBS Inc.: *See—*
Wilson, Gregg, 256,132, Cl. D17-21.000.
Chevassus, Alain, to Lefebure Isolants Reunis. Cosmetic box. 256,172, 7-29-80, Cl. D28-83.000.
Christensen, Boerge J. R.: *See—*
Caroee, Claus J.; Frederiksen, Ole; and Christensen, Boerge J. R., 256,073, Cl. D6-113.000.
Colato, Albert E.; and Pomroy, James F., to Plastics, Inc. Rack for roasting food items. 256,082, 7-29-80, Cl. D7-85.000.
Collie, Stafford D., to Phillips Petroleum Company. Combined flower pot and saucer or the like. 256,108, 7-29-80, Cl. D11-152.000.
Collie, Stafford D., to Phillips Petroleum Company. Combined flower pot and saucer or the like. 256,109, 7-29-80, Cl. D11-152.000.
Colorforms: *See—*
Birnkrant, Melvyn, 256,143, Cl. D21-114.000.
Composite Technology, Inc.: *See—*
Green, Andrew, 256,165, Cl. D25-74.000.
Conair Corporation: *See—*
Tomaro, Patrick M., 256,171, Cl. D28-58.000.
Cornelius Company, The: *See—*
Erickson, James W., 256,125, Cl. D15-120.000.
CPG Products Corp.: *See—*
Venditti, Arthur P.; Kjellman, Samuel T.; and Doyle, Robert O., 256,139, Cl. D21-1.000.
Crisp, David: *See—*
Thompson, Kevin; and Crisp, David, 256,168, Cl. D27-51.000.
Cross, Raymond E., to Federal Research Corporation. Desk set and planter. 256,137, 7-29-80, Cl. D19-75.000.
Croyle, Jack V.; and Bateman, Robert F., to Dart Industries Inc. Storage and serving container or the like. 256,078, 7-29-80, Cl. D7-16.000.
Culbertson, Richard, to General Electric Company. Combined radio and walkie talkie or similar article. 256,122, 7-29-80, Cl. D14-68.000.
Cura', Mario, to A.T.N. S.p.A. Combined boat steering wheel and support column. 256,112, 7-29-80, Cl. D12-70.000.
Cusenza, John. Hair treatment iron. 256,169, 7-29-80, Cl. D28-35.000.
Danat, Alfred W.; and Schaefer, John L., to Sallet, Inc. Face place for a belt buckle. 256,068, 7-29-80, Cl. D2-431.000.
Darnell, Arne P., to Perstorp AB. Watering pitcher. 256,152, 7-29-80, Cl. D23-11.000.
Dart Industries Inc.: *See—*
Croyle, Jack V.; and Bateman, Robert F., 256,078, Cl. D7-16.000.
DiNunzio, Antonio. Type font of alphabet and numerals. 256,134, 7-29-80, Cl. D18-24.000.
Diversified Insulation, Inc.: *See—*
Ward, Bruce K., 256,157, Cl. D23-163.000.
Ward, Bruce K., 256,158, Cl. D23-163.000.
Dixson, Tommy W. Accessory console for motorcycles. 256,115, 7-29-80, Cl. D12-114.000.
Doyle, Robert O.: *See—*
Venditti, Arthur P.; Kjellman, Samuel T.; and Doyle, Robert O., 256,139, Cl. D21-1.000.
Dryer, Ivan. Theater building. 256,163, 7-29-80, Cl. D25-26.000.
Dunbar, Donald; Bell, Evan W.; and Dziewulski, Ted, to Phillips Petroleum Company. Combined flower pot and saucer or the like. 256,110, 7-29-80, Cl. D11-153.000.
Durante, Alfred J., to Cartier, Inc. Bracelet. 256,105, 7-29-80, Cl. D11-4.000.
Dziewulski, Ted: *See—*
Dunbar, Donald; Bell, Evan W.; and Dziewulski, Ted, 256,110, Cl. D11-153.000.
Erickson, James W., to Cornelius Company, The. Beverage dispensing head. 256,125, 7-29-80, Cl. D15-120.000.
Federal Research Corporation: *See—*
Cross, Raymond E., 256,137, Cl. D19-75.000.
Fejer, T. William; and Koch, Stuart L., to Plastofilm Industries, Inc. Rocking chair. 256,070, 7-29-80, Cl. D6-49.000.
Ferenc, Robert A.; and Gretta, Jack E., to Whelen Engineering Company, Inc. Aircraft warning light. 256,104, 7-29-80, Cl. D10-114.000.
Fernandes, William E. Clamp-on grinding wheel dressing tool. 256,091, 7-29-80, Cl. D8-51.000.
Formica Corporation: *See—*
Hershberger, William J., 256,071, Cl. D6-66.000.
Fortier, Frank J. Houseboat deck. 256,113, 7-29-80, Cl. D12-70.000.
Frederiksen, Ole: *See—*
Caroee, Claus J.; Frederiksen, Ole; and Christensen, Boerge J. R., 256,073, Cl. D6-113.000.
Friso, Gunnar, to Richardson-Merrell, Inc. Bottle. 256,094, 7-29-80, Cl. D9-115.000.
Fujitaki, Roy K.; and Morisaku, Masao, to Rasmussen, Jack D. Dental impression instrument. 256,160, 7-29-80, Cl. D24-10.000.
Game Time, Inc.: *See—*
Lofton, Steven A.; and Mulligan, David C., 256,150, Cl. D21-250.000.
Ganz, Elsie M. Packaging container. 256,096, 7-29-80, Cl. D9-219.000.
Garritson, John F., to Basic Energy Conservation Services, Inc. Air intake hood for a furnace venting system. 256,156, 7-29-80, Cl. D23-151.000.
Gedye, Laurence R., to L. R. & N. R. Gedye Pty. Limited. Lid for a compost bin. 256,088, 7-29-80, Cl. D7-194.000.
General Electric Company: *See—*
Culbertson, Richard, 256,122, Cl. D14-68.000.
Houlihan, John T., 256,123, Cl. D14-73.000.
Gillette Company, The: *See—*
Sandonato, James L., 256,095, Cl. D9-147.000.
Green, Andrew, to Composite Technology, Inc. Stile. 256,165, 7-29-80, Cl. D25-74.000.
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Haerr, Raymond H.; and Bielke, Warren, to Xomed, Inc. Pad for anchoring an infusion needle and the tubing connected thereto to the skin of a patient. 256,162, 7-29-80, Cl. D24-52.000.
Hagg, Vernon A.; and Trask, Phillip W. Sole for footwear. 256,066, 7-29-80, Cl. D2-322.000.
Hagg, Vernon A.; and Trask, Phillip W. Sole body for footwear. 256,067, 7-29-80, Cl. D2-322.000.
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Houlihan, John T., to General Electric Company. Clock radio or similar article. 256,123, 7-29-80, Cl. D14-73.000.
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Oliver, Don W., to Procter & Gamble Company, The. Surgical drape. 256,161, 7-29-80, Cl. D24-49.000.
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Senter, Jonas. Shoe. 256,065, 7-29-80, Cl. D2-291.000.
Specwell Corporation: *See—*
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Spitz, Melvin P.; and Wilson, Peter C., to Kinematic Industries, Inc. Head rail member for folding bed. 256,076, 7-29-80, Cl. D6-198.000.
Stewart, Noel W., Jr. Snubber for a retractable boat dagger board. 256,092, 7-29-80, Cl. D8-382.000.
Storms, Bobby D. Retractable safety writing instrument. 256,135, 7-29-80, Cl. D19-43.000.
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Thompson, Kevin; and Crisp, David, to Rizla Limited. Cigarette making machine. 256,168, 7-29-80, Cl. D27-51.000.
Thomson, Ernest F., to P. R. Mallory & Co. Inc. Portable fluorescent lamp. 256,167, 7-29-80, Cl. D26-42.000.
Tomaro, Patrick M., to Conair Corporation. Holder for manicuring implement, brush or similar article. 256,171, 7-29-80, Cl. D28-58.000.
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Ward, Bruce K., to Diversified Insulation, Inc. Combined vent and baffle. 256,157, 7-29-80, Cl. D23-163.000.
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CLASSIFICATION OF PATENTS

ISSUED JULY 29, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

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18	4,214,548
60	4,214,549
712	4,214,550

CLASS 119

3	4,214,551
14.01	4,214,552
14.08	4,214,553
71	4,214,554
103	4,214,555
	4,214,556

CLASS 123

18 R	4,214,557
41.77	4,214,560
169 C	4,214,567
179 L	4,214,565
198 R	4,214,568
293	4,214,559
432	4,214,561
437	4,214,563
489	4,214,558
502	4,214,564
568	4,214,562
594	4,214,566

CLASS 126

77	4,214,569
121	4,214,570
190	4,214,571
425	4,214,572
438	4,214,573
446	4,214,574
450	4,214,575

CLASS 128

24.1	4,214,576
25 R	4,214,577
90	4,214,578
94	4,214,579
155	4,214,581
156	4,214,582
204.26	4,214,580
214 F	4,214,583
218 M	4,214,584
303 R	4,214,585
334 R	4,214,586
	4,214,587
402	4,214,588
680	4,214,589
710	4,214,590
731	4,214,591
743	4,214,592
748	4,214,593
786	4,214,594

CLASS 131

108	4,214,595

CLASS 132

7	4,214,596
9	4,214,597
92 R	4,214,598

CLASS 134

19	4,214,915

CLASS 136

89 SJ	4,214,916

CLASS 137

15	4,214,599
72	4,214,600
102	4,214,601
119	4,214,602
199	4,214,603
375	4,214,604
495	4,214,605
	4,214,606
499	4,214,607
546	4,214,608
573	4,214,609
597	4,214,610

CLASS 138

30	4,214,611
144	4,214,612

CLASS 139

33	4,214,613

CLASS 141

1	4,214,614
363	4,214,615

CLASS 144

2 N	4,214,617
2 Z	4,214,616

CLASS 148

1.5	4,214,917
	4,214,918
	4,214,919
	4,214,920
6.35	4,214,921
9.5	4,214,922
12 R	4,214,923
18	4,214,924
127	4,214,925
175	4,214,926

CLASS 149

2	4,214,927
19.9	4,214,928
109.4	4,214,929

CLASS 152

209 D	4,214,618
347	4,214,619
354 R	4,214,620

CLASS 156

1	4,214,930
169	4,214,931
187	4,214,932
238	4,214,933
244.11	4,214,934
272	4,214,935
302	4,214,936
361	4,214,937
	4,214,938
398	4,214,939
402	4,214,940
414	4,214,941
300	4,214,942
304	4,214,943
518	4,214,944
634	4,214,945
643	4,214,946

CLASS 160

66	4,214,621
168 A	4,214,622

CLASS 162

18	4,214,947
158	4,214,948
352	4,214,949

CLASS 164

83	4,214,623
89	4,214,624
420	4,214,625

CLASS 165

29	4,214,626
179	4,214,627

CLASS 166

75 R	4,214,628
129	4,214,629

CLASS 169

18 4,214,630
57 4,214,631

CLASS 172

42 4,214,632
123 4,214,633
179 4,214,634
271 4,214,635
450 4,214,636
484 4,214,637

CLASS 173

1 4,214,638
43 4,214,639

CLASS 174

15 C 4,215,234
52 PE 4,215,235
59 4,215,236
99 B 4,215,237

CLASS 176

87 4,214,950

CLASS 177

70 4,214,640

CLASS 178

23 R 4,215,238

CLASS 179

1 J 4,215,242
1 SM 4,215,240
1 VC 4,215,241
2 DP 4,215,243
18 B 4,215,246
18 BC 4,215,247
99 A 4,215,248
111 R 4,215,249
149 4,215,250
170 R 4,215,251
170.2 4,215,252

CLASS 180

19 R 4,214,641
132 4,214,642
148 4,214,643
226 4,214,644

CLASS 181

148 4,214,645
287 4,214,646

CLASS 184

3 A 4,214,647

CLASS 188

73.3 4,214,648
73.5 4,214,649
196 R 4,214,650
251 R 4,214,651

CLASS 192

48.7 4,214,653
58 R 4,214,652

CLASS 194

1 E 4,214,654

CLASS 198

374 4,214,655
380 4,214,656

CLASS 200

82 R 4,215,253
83 C 4,215,254
144 B 4,215,255
148 D 4,215,256
153 T 4,215,257

CLASS 204

1 T 4,214,951
14 R 4,214,952
15 4,214,953
32 R 4,214,954
67 4,214,955
4,214,956
98 4,214,957
4,214,958
99 4,214,959
105 R 4,214,964
129.65 4,214,960
140 4,214,961
157.1 R 4,214,962
158 R 4,214,963
159.15 4,214,965
192 E 4,214,966
195 M 4,214,968
195 S 4,214,967
255 4,214,969
265 4,214,970
290 F 4,214,971
298 4,214,972
299 R 4,214,973

CLASS 206

209.1 4,214,657
244 4,214,658
365 4,214,659
427 4,214,660
466 4,214,661
555 4,214,662

CLASS 208

10 4,214,974
33 4,214,975
48 R 4,214,976
108 4,214,977
120 4,214,978
128 4,214,979
139 4,214,980

CLASS 209

155 4,214,981
164 4,214,982
166 4,214,983
214 4,214,984
552 4,214,663

CLASS 210

11 4,214,985
42 S 4,214,986
44 4,214,987
159 4,214,988
4,214,989
194 4,214,990
232 4,214,991
274 4,214,992
282 4,214,993
490 4,214,994

CLASS 212

142.1 4,214,664

CLASS 219

10.43 4,215,259
10.55 D 4,215,258
53 4,215,260
69 V 4,215,261
95 4,215,262
121 L 4,215,263
225 4,215,264
390 4,215,265
413 4,215,266
439 4,215,267
507 4,215,268

CLASS 220

2.1 R 4,214,666
3.2 4,214,667
3.3 4,214,668
6 4,214,669
70 4,214,670
219 4,214,671
234 4,214,672
271 Re.30,349

CLASS 221

259 4,214,673

CLASS 222

79 4,214,674
83 4,214,675
83.5 4,214,676
145 4,214,677
149 4,214,678
158 4,214,679
161 4,214,680
214 4,214,681
321 4,214,682

CLASS 224

42.2 4,214,683
45 L 4,214,684
197 4,214,688
211 4,214,685
252 4,214,686
323 4,214,687

CLASS 226

21 4,214,689
49 4,214,690
74 4,214,691

CLASS 228

44.1 R 4,214,692
56 Re.30,348
148 4,214,693

CLASS 229

31 FS 4,214,694
36 4,214,695
40 4,214,696
52 B 4,214,697

CLASS 236

42 4,214,698

CLASS 237

12.3 C 4,214,699

CLASS 239

2 S 4,214,700
63 4,214,701
110 4,214,702
127.3 4,214,703
187 4,214,704
227 4,214,705
394 Re.30,350
553.3 4,214,706
553.5 4,214,707
703 4,214,708
707 4,214,709

CLASS 241

24 4,214,710
30 4,214,711
46 B 4,214,712
57 4,214,713
93 4,214,714
4,214,715
186 R 4,214,716

CLASS 242

36 4,214,717
129.6 4,214,718
198 4,214,719

CLASS 244

12.2 4,214,720
135 B 4,214,721
208 4,214,722

CLASS 248

68 R 4,214,723
167 4,214,724
188.7 4,214,725
575 4,214,726

CLASS 250

201 4,215,270
216 4,215,271
293 4,215,272
347 4,215,273
361 R 4,215,274
459 4,215,275
539 4,214,995

CLASS 251

63.4 4,214,727
149.2 4,214,728
4,214,729
171 4,214,730
306 4,214,731
315 4,214,732

CLASS 252

1 4,214,996
8.55 B 4,215,000
8.55 C 4,215,001
8.55 D 4,214,999
8.8 4,214,997
4,214,998
32.5 4,215,002
99 4,215,003
153 4,215,005
156 4,215,004
174.11 4,215,006
174.25 4,215,007
184 4,215,008
4,215,009
300 4,215,010
426 4,215,011
429 B 4,215,013
4,215,014
429 R 4,215,012
453 4,215,015
455 Z 4,215,016
458 4,215,017
466 B 4,215,019
466 J 4,215,018
519 4,215,020

CLASS 256

24 4,214,734

CLASS 260

5 4,215,021
4,215,022
22 CB 4,215,023
23 S 4,215,024
29.2 R 4,215,025
29.4 UA 4,215,027
29.6 TA 4,215,028
30.8 R Re.30,352
33.8 UA 4,215,029
40 R 4,215,030
4,215,031
4,215,032
42.15 4,215,033
45.75 W 4,215,035
45.8 A 4,215,034
112 R 4,215,036
112.5 LH 4,215,038
112.5 R 4,215,037
112.5 S 4,215,039
123.5 4,215,040
141 4,215,041
151 4,215,042
239.3 B 4,215,043
239.3 D 4,215,044
292 E 4,215,026
326.26 4,215,046
326.34 4,215,047
340.6 4,215,048
343.3 R 4,215,049
343.6 4,215,050
346.7 4,215,051
4,215,052
4,215,053
4,215,054
4,215,055
4,215,056
347.5 4,215,057
348.27 4,215,058
348.29 4,215,059
4,215,060
4,215,061
365 4,215,062
369 4,215,063
397.2 4,215,045
403 4,215,064
415 4,215,065
429 R 4,215,066
429.9 4,215,067
464 4,215,068
465 D 4,215,069
502.5 4,215,070
543 R 4,215,071
551 P 4,215,072
563 D 4,215,073
563 P 4,215,074
566 AC 4,215,075
655 4,215,078

CLASS 261

36 R 4,215,079
111 4,215,080
122 4,215,081
124 4,215,082
155 4,215,083

CLASS 264

8 4,215,084
15 4,215,085
135 4,215,086
320 4,215,087
332 4,215,088
516 4,215,089

CLASS 266

99 4,214,735
200 4,214,736

CLASS 267

8 A 4,214,737
141.1 4,214,738

CLASS 269

75 4,214,739

CLASS 271

3 4,214,740
18.3 4,214,741
69 4,214,742
182 4,214,743
202 4,214,744
272 4,214,745
294 4,214,746

CLASS 272

8 R 4,214,747
67 4,214,748

CLASS 273

1 M 4,214,750
1 R 4,214,749
26 B 4,214,751
30 4,214,752
59 R 4,214,753
167 H 4,214,754
243 4,214,755

CLASS 274

23 R 4,214,756
4,214,757

CLASS 277

12 4,214,758
4,214,759
34.3 4,214,760
123 4,214,761
138 4,214,762
167.5 4,214,763
935 D 4,214,764

CLASS 279

1 K 4,214,765
46 R 4,214,766

CLASS 280

5 A 4,214,767
402 4,214,771
415 A 4,214,772
605 4,214,777
631 4,214,773
652 4,214,774
708 4,214,775
760 4,214,776
809 4,214,768
817 4,214,769
819 4,214,770

CLASS 285

39 4,214,778
93 4,214,779
134 4,214,780
222 4,214,781

CLASS 292

87 4,214,782
150 4,214,783

CLASS 294

55 4,214,784
64 R 4,214,785

CLASS 296

1 S 4,214,786
4,214,787
39 R 4,214,788
183 4,214,789

CLASS 297

326 4,214,790

CLASS 299

4 4,214,791

CLASS 301

36 R 4,214,792
111 4,214,793

CLASS 303

6 C 4,214,794
89 4,214,795

CLASS 307

40 4,215,276
41 4,215,277
116 4,215,278
254 4,215,279
295 4,215,280
304 4,215,281
364 4,215,282

CLASS 308

26 4,214,796

CLASS 310

14 4,215,283
70 A 4,215,284
90 4,215,285
155 4,215,286
217 4,215,287

CLASS 312

257 R 4,214,797

CLASS 313

394 4,215,288
486 4,215,289
496 4,215,290

CLASS 315

5.41 4,215,291
98 4,215,292
366 4,215,293
383 4,215,294
408 4,215,295
4,215,296

CLASS 316

26 4,214,798

CLASS 318

130 4,215,297
327 4,215,298
574 4,215,299
603 4,215,300
4,215,301
696 4,215,302
752 4,215,303
758 4,215,304
803 4,215,305

CLASS 320

2 4,215,306
4,215,307

CLASS 324

78 D 4,215,308
158 D 4,215,309
225 4,215,310

CLASS 328

55 4,215,314
140 4,215,315

CLASS 329

50 4,215,316

CLASS 330

256 4,215,317
268 4,215,318

CLASS 331

94.5 G 4,215,320
4,215,321
94.5 H 4,215,319
116 FE 4,215,322

CLASS 332

7.51 4,215,323
4,215,324

CLASS 333

20 4,215,325
182 4,215,326
252 4,215,327

CLASS 335

6 4,215,328
78 4,215,329
252 4,215,331
306 4,215,330

CLASS 337

394 4,215,332

CLASS 338

322 4,215,333

CLASS 339

20 4,214,799
45 M 4,214,800
59 R 4,214,801
60 M 4,214,802
103 R 4,214,803
183 4,214,804
198 G 4,214,805
242 4,214,806
274 4,214,733

CLASS 340

27 AT 4,215,334
40 Re.30,355
177 CA 4,215,336
347 P 4,215,337
373 4,215,338
384 E 4,215,339
507 4,215,340
552 4,215,341
572 4,215,342
695 4,215,349
711 4,215,343

CLASS 343

18 E 4,215,344
112 R 4,215,345
113 R 4,215,346
117 R 4,215,347

CLASS 346

75 4,215,350
136 4,215,351
140 R 4,215,352
4,215,353
4,215,354
155 4,215,355

CLASS 350

3.73 4,214,807
4.1 4,214,808
96.20 4,214,809
96.21 4,214,810
4,214,811
4,214,812
152 4,214,813
188 4,214,814
215 4,214,815
218 4,214,816
286 4,214,817
310 4,214,818
334 4,214,819
357 4,214,820

CLASS 352

70 4,214,821
78 R 4,214,822
87 4,214,823

CLASS 354

23 D 4,214,824
31 4,214,826
33 4,214,825
127 4,214,827
197 4,214,829
202 4,214,830
275 4,214,828

CLASS 355

3 R 4,214,831
8 4,214,832
14 C 4,214,833
46 4,214,834

CLASS 356

306 4,214,835

CLASS 357

22 4,215,356
24 4,215,357
56 4,215,358
70 4,215,359
4,215,360
81 4,215,361

CLASS 358

8 4,215,362
21 R 4,215,363
47 4,215,364
111 4,215,365
124 4,215,366
139 4,215,367
4,215,368
146 4,215,369
4,215,370
172 4,215,371
188 4,215,372
237 4,215,373
260 4,215,374
261 4,215,375

CLASS 360

36 4,215,376
73 4,215,377
74.1 4,215,378
85 4,215,379

CLASS 361

119 4,215,380
124 4,215,381
166 4,215,382
210 4,215,383
215 4,215,384
273 4,215,385
394 4,215,386
398 4,215,387

CLASS 362

104 4,215,388
199 4,215,389
311 4,215,390

CLASS 363

25 4,215,391
49 4,215,392
124 4,215,393
137 4,215,394

CLASS 364

101 4,215,395
4,215,396
4,215,397
4,215,398
4,215,399
200 4,215,400
4,215,401
4,215,402
424 4,215,403
431 4,215,404
436 4,215,405
468 4,215,406
4,215,407
505 4,215,408
510 4,215,409
515 4,215,414
516 4,215,410
527 4,215,411
551 4,215,412
570 4,215,413
724 4,215,415
736 4,215,416
4,215,417
757 4,215,418
760 4,215,419
802 4,215,420
900 4,215,421
4,215,422

CLASS 365

77 4,215,423
174 4,215,424

CLASS 367

83 4,215,425
4,215,426
4,215,427
137 4,215,428
139 4,215,429

CLASS 368

28 4,214,433
71 4,214,434

CLASS 370

84 4,215,245
97 4,215,348
116 4,215,244

CLASS 371

69 4,215,335

CLASS 375

5 4,215,311
111 4,215,430
114 4,215,239

CLASS 400

124 4,214,836
144.3 4,214,837
220.1 4,214,838

CLASS 402

31 4,214,839

CLASS 403

4,214,840
188 4,214,841

CLASS 405

191 4,214,842
225 4,214,843

CLASS 406

123 4,214,844

CLASS 407

114 4,214,845
4,214,846
4,214,847

CLASS 414

77 4,214,848
545 4,214,849

CLASS 415

49 4,214,850
115 4,214,851
4,214,852

CLASS 417

154 4,214,853
402 4,214,854
477 4,214,855

CLASS 422

54 4,215,090
75 4,215,091
100 4,215,092
179 4,215,093

CLASS 423

123 4,215,094
240 4,215,095
241 4,215,096
279 4,215,097
305 4,215,098
360 4,215,099
552 4,215,100
659 4,215,101

CLASS 424

3 4,215,102
4 4,215,103
15 4,215,104
57 4,215,105
81 4,215,106
89 4,215,107
92 4,215,108
177 4,215,109
4,215,110
4,215,111
4,215,112
212 4,215,113
216 4,215,115
217 4,215,116
248.4 4,215,117
4,215,118
248.5 4,215,119
250 4,215,120
4,215,121
251 4,215,122
256 4,215,123
263 4,215,124
4,215,125
4,215,126
269 4,215,127
272 4,215,128
4,215,129
273 B 4,215,134
4,215,135
273 P 4,215,132
273 R 4,215,130
4,215,131
4,215,133
274 4,215,136
4,215,137
275 4,215,114
282 4,215,138
300 4,215,139
301 4,215,140
304 4,215,141
305 4,215,142
315 4,215,143
318 4,215,144
324 4,215,145
330 4,215,146
333 4,215,147
4,215,148

CLASS 425

60 4,214,856
141 4,214,857
145 4,214,858
147 4,214,859
149 4,214,860
199 4,214,861
204 4,214,862
222 4,214,863
329 4,214,864
532 4,214,865

CLASS 426

292 4,215,149
430 4,215,150
467 4,215,151
579 4,215,152
643 4,215,153

CLASS 427

50 4,215,154
74 4,215,155
84 4,215,156
116 4,215,157
130 4,215,158
142 4,215,159
177 4,215,160
228 4,215,161
435 4,215,162

CLASS 428

24 4,215,163
34 4,215,164
35 4,215,165
159 4,215,166
203 4,215,167
215 4,215,168
220 4,215,169
245 4,215,171
264 4,215,172
328 4,215,170
331 4,215,173
375 4,215,174
4,215,175
412 4,215,176
413 4,215,177
421 4,215,178
451 4,215,179
553 4,215,180
591 4,215,181

CLASS 429

15 4,215,182
30 4,215,183
101 4,215,184
104 Re.30,353
111 4,215,185
139 4,215,186
161 4,215,187
194 4,215,188
217 4,215,189
222 4,215,190

CLASS 430

82 4,214,907
152 4,215,191
270 4,215,192
291 4,215,193
323 4,215,194
496 4,215,195
627 4,215,196

CLASS 432

12 4,214,866
29 4,214,867
31 4,214,869
124 4,214,868

CLASS 433

40 4,214,870
60 4,214,367
189 4,214,366
216 4,214,871

CLASS 435

18 4,215,197
31 4,215,198
71 4,215,199
273 4,215,200
290 4,215,201

CLASS 440

13 4,214,547

CLASS 455

43 4,215,431
284 4,215,312
326 4,215,313
612 4,215,269

CLASS 474

148 4,214,488

CLASS 521

81 4,215,202
189 4,215,203

CLASS 525

161 4,215,204
331 4,215,205
441 4,215,206

CLASS 526

64 4,215,207
285 4,215,208
292 4,215,209

CLASS 528

93 4,215,210
313 4,215,211

CLASS 536

4 Re.30,354
57 4,215,212
115 4,215,213

CLASS 542

426 4,215,214
427 4,215,215

CLASS 544

117 4,215,216
139 4,215,217

CLASS 546

162 4,215,218
179 4,215,219

CLASS 548

341 4,215,220
344 4,215,221

CLASS 560

53 4,215,222

CLASS 562

401 4,215,223
485 4,215,224
606 4,215,225

CLASS 568

341 4,215,230
454 4,215,077
461 4,215,076
705 4,215,226
706 4,215,227
712 4,215,228
804 4,215,229

CLASS 585

251 4,215,231

CLASSIFICATION OF DESIGNS

D2— 286 256,064
291 256,065
322 256,066
256,067
431 256,068
D6— 11 256,069
49 256,070
66 256,071
86 256,072
113 256,073
130 256,074
186 256,075
198 256,076
D7— 6 256,077
16 256,078
47 256,079
52 256,080
71 256,081
85 256,082
102 256,083
107 256,084
131 256,085
151 256,086
153 256,087
194 256,088
256,089
D8— 08 256,090
51 256,091
382 256,092
401 256,093
D9— 115 256,094
147 256,095
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